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English and Vernacular names.	Scientific name.
Anjan	*Hardwickia binata.*
Babul	*Acacia arabica.*
Bahan	*Populus euphratica.*
Bamboo	*Dendrocalamus strictus.*
Bhendi	*Thespesia populnea.*
Boga	*Tephrosia candida.*
Casuarina	*Casuarina equisetifolia.*
Cypress	*Cupressus torulosa.*
Dhavda	*Anogeissus latifolia.*
Heddi	*Adina cordifolia.*
Hirda	*Terminalia chebula.*
Honey tree	*Tetrameles nudiflora.*
Honne	*Pterocarpus marsumpium.*
Kandi	*Prosopis specigera.*
Khair	*Acacia catechu.*
Lantana	*Lantana camara.*
Lai	*Tamarix sp.*
Mango	*Mangifera indica.*
Matti, Ain	*Terminalia tomentosa.*
Mhowra	*Bassia latifolia.*
Mulberry	*Morus alba.*
Nana	*Lagerstroemia microcarpa.*
Nimb	*Melia azadirachta.*
Oak	*Quercus incana.*
Palas	*Butea frondosa.*
Sandal	*Santalum album.*
Sissum	*Dalbergia latifolia.*
Shivan, Shivni	*Gmelina arobrea.*
Sawar, Simul	*Bombax malabaricum.*
Tali	*Dalbergia sissoo.*
Teak	*Tectona grandis.*
Tiwas, Karimuttal	*Ougeinia dalbergioides.*
Timbru, Tumri	*Diospyros melanoxylon.*
Tung tree	*Aleurites fordii.*

FOREST ADMINISTRATION REPORT OF THE BOMBAY PRESIDENCY INCLUDING SIND FOR THE YEAR 1935-36.

CHAPTER I.

CONSTITUTION OF STATE FORESTS.

1. ALTERATIONS IN AREA. (Form No. 51, Parts I and II.)

The changes in forest area during the year were as follows:—

Class of forest.		Area on 1st April 1935.	Added during the year.	Excluded during the year.	Area on 31st March 1936.
		Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.
Reserved ..	In charge of Forest Department ..	11,656	105	87	11,674
	In charge of Revenue Department ..	1,653	7	16	1,644
Protected ..	In charge of Forest Department ..	245	13	1	257
	In charge of Revenue Department ..	620	7	8	619
Total ..		14,174	132	112	14,194

The areas added and excluded comprise:—

	Square miles.	
	Gain.	Loss.
1. Afforestations against and disforestments in favour of cultivation	1	11
2. Alluvial accretions and erosions in Sind ..	37	8
3. Transfer from Reserved to Protected Forest ..	13	13
4. Transfer from one Division to another ..	80	80
5. Errors corrected	1	....
	132	112
Net gain ..	20 square miles.	

Exclusion of 11 square miles of reserved forest, chiefly in favour of cultivation, in the Central and Southern Circles and the addition of 31 square miles of reserved forest due to alluvial accretions in the Sind Circle and to afforestments and correction of errors in the remaining

Circles resulted in a net gain of 20 square miles in the total area of the Presidency.

According to the territorial changes sanctioned in November 1934, the Mokhada forests were transferred from the West Nasik to the East Thana Division and the forests of the Sinnar Round and the control of sandalwood and other forest work in the Niphad taluka, south of the rivers Kodwa and Godawari, were transferred from the East Nasik to the West Nasik Division.

2. Forest Settlements.

The operations of the year are given in Form No. 52 for each Circle. The area finally settled during the year was about 14 square miles, chiefly in the Sind Circle. The only expenditure on settlements was a sum of Rs. 115 incurred in the Southern Circle for acquiring 4 acres of malki land lying in the midst of the casuarina plantation at Binge in W. D. Kanara.

The settlement of Sardar Biwalkar's inam forest (1,713 acres) in the Kolaba Division is still held over pending receipt of Government orders in connection with the decision of the Privy Council on the appeal preferred by the Sardar.

3. Demarcation.

27 miles of new boundaries were artificially demarcated at a cost of Rs. 443 and 38,176 miles of existing boundaries were repaired at a cost of Rs. 3,821 in all Circles. The total length of boundaries at the close of the year was 40,845 miles.

Two important frontier lines, viz., 21 miles between Goa and British territory and 21 miles between Mysore and British territory were also cleared in the Southern Circle.

The erection of additional boundary cairns between the old ones in the East Khandesh Division, in order to differentiate the open from the closed areas, was continued and completed during the year.

4. Forest Surveys.

No survey work was done. The final report on the survey work carried out during 1931–32 in the Dharwar and Bijapur districts by the Survey of India Department is still awaited.

The expenditure on the constitution of State Forests was :—

	1935–36.	1934–35.
	Rs.	Rs.
Northern Circle	152	1,169
Central Circle	291	4
Southern Circle	115	57
Sind Circle	....	....

CHAPTER II.

MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

(a) *Preparation and Control of Regular Working Plans.*

Preparation (*Form No. 55*).—The following working plans were finally sanctioned by Government :—

(1) The revised working plan for the Thana forests.

(2) Working plan for the Satara Division.

(3) Working plan for the Nagzari Valley and the Kalanadi Kaneri slopes.

The following plans have been completed and are being printed :—

(1) Revised working plan for the Nasik Above-ghat forests, East and West Nasik Divisions ;

(2) Working plan for the Satmalla forests, East Khandesh Division ;

(3) Revised working plan for all the Coastal Casuarina Plantations, Kanara Western Division ;

(4) Revised working plan for the Yellapur-Mundgod High Forests, Kanara Eastern Division ;

(5) Revised working plan for the forests of Lower Sind, Hyderabad and Karachi Divisions.

Some alterations providing for " cleanings " and "arrear thinnings " were made in the Panch Mahals working plan. An overlapping Matchwood Working Circle was also added to this plan and to the working plan for the Baragaon Dangs. Work in connection with the Thana Gurcharan working plan is progressing. Revision of the working plan for the Nandurbar-Navapur and Deomogra forests has been completed. It has been decided to modify certain silvicultural sections in the Kolaba working plan. The working plan for the Castle-Rock local fuel supply is also being modified. Data are being collected for the revision of the Kalinadi Slopes and Gund working plans. The field work for the revision of the working plan for the Upper Sind forests has been taken in hand.

(b) *Control of Working Plans.*

Prescriptions of the working plans in force were adhered to as far as possible in all Circles. Lack of demand, poor quality of tree-growth, inaccessibility, or long leads were the main causes for some fellings falling into arrears in all Circles.

The operation of the working plan for the protected forests in charge of the Forest Department and Nominal Reserves in the Thana District has again been held in abeyance till 1943-44 when thinnings in the

Thana Reserved Forest coupes are expected to be brought up to date. In the Dhulia *anjan* areas only dead and dying *anjan* trees are being marked for felling as it is the *anjan* leaves from which more revenue is obtained than from the fuel. *Khair* and other fuel species will, however, be worked more heavily now under a girth limit prescription. The system of "cautious thinnings" or "improvement fellings" suggested in the Protection Working Circle of the Poona working plan is being replaced by a system of "restricted coppice with standards" as no contractors are willing to purchase coupes under the former method of working. In the Pasture Working Circle of the same plan the fellings are restricted to dead, partially dead and fallen trees in place of dead, mature and badly shaped trees, as the exploitation in the past exceeded the prescriptions of the working plan. The felling lists of the Supa High Forest working plan in the Northern Division Kanara were partially modified to ensure a more sustained yield. The Yekambi-Sonda working plan in the Eastern Division Kanara is still held in abeyance as there is no possibility of the area being worked at a profit owing to its long lead and to the continued slump in the rates obtained for jungle wood timbers.

2. Communications and Buildings.

(*a*) *Roads and Bridges.*

Construction work was in progress on 9½ miles of new roads and repairs were carried out over 1,161 miles of existing roads and paths in the Northern, Central and Southern Circles. The expenditure on new works and repairs respectively was Rs. 17,557 and Rs. 88,611 as against Rs. 8,127 and Rs. 92,978 in the previous year. A sum of Rs. 45,629 on account of the maintenance charges on the Alnavar-Dandeli Railway is included in the expenditure incurred on repairs.

The work on the Dara-Dhadgaon road in the Central Circle, which was held in abeyance for want of funds, was resumed and a section 3½ miles long was constructed during the year. The new works undertaken in the Southern Circle were (1) the partial construction of the Mangalankop-Amatgar-Kurli Road, (2) the completion of a culvert on the Kanadgal-Halbail-Lalguli Road, (3) the partial construction of a causeway over the Masti-Nalla and (4) the replacement of culverts on the Kadra-Shivpur Road.

Government have accorded technical sanction to the construction of the Ozar-Saiwan and the Temba-Parali Roads in the Northern Circle. It is hoped that adequate funds will be granted for the construction of these important and long overdue roads.

The Kharol-Adgaon Road in the West Nasik Division and the Peth-Ambivli bridle path in the Kolaba Division were taken over by this Department during the year. The Patne-Karve Road in the Belgaum Division was handed over to the Revenue Department for transfer to the District Local Board, Belgaum, as sanctioned by Government.

(*b*) *Buildings.*

The total expenditure incurred on the construction of new buildings was Rs. 35,805 as against Rs. 38,543 in the previous year. The expenditure on repairs was Rs. 25,848 against Rs. 24,547 in the preceding year.

The Conservators again report that progress in the matter of providing housing accommodation for subordinates is very slow owing to want of funds. In the Northern Circle cheap " katcha " quarters are, wherever feasible, being built for subordinates at about 1/8th of the cost of pucca houses but these katcha huts are most unsatisfactory affairs after 2 to 3 years use and are not economical.

(*c*) *Miscellaneous (other works).*

Expenditure on wells, telephone rents, fencing of compounds, silt clearance, Public Works Department water charges etc. amounted to Rs. 4,869, of which only Rs. 748 was spent on new works, as against Rs. 7,954 in the previous year.

3. Protection of Forests.

(*a*) *General Protection.* (Form No. 57.)

The following statement compares the number of forest offences of the year with those of 1934–35 and the average of the last three years :—

Class of offence.	1935–36.					1934–35.	Average of 1932–33 to 1934–35.
	Northern Circle.	Central Circle.	Southern Circle.	Sind Circle.	Total.		
I. Injury to forest by fire.	710	631	391	310	2,042	2,062	1,977
II. Unauthorized felling or removal of forest produce ..	5,531	4,646	1,590	1,896	13,663	12,426	11,613
III. Unauthorized grazing ..	2,552	1,855	581	2,438	7,426	7,160	6,813
IV. Other offences.	1,259	1,108	443	461	3,271	3,059	2,946
Total of 1935–36 ..	10,052	8,240	3,005	5,105	26,402	..	..
Total of 1934–35 ..	9,137	7,768	3,027	4,775	..	24,707	..
Average of 1932–33 to 1934–35 ..	8,302	8,092	2,802	4,153	..	..	23,349

There was an increase of 1,695 in the total number of offences as compared with those of the previous year. The increase is shared by all Circles except the Sind Circle. Offences under Class I have decreased by 20; while those under Classes II, III and IV have increased by 1,237, 266 and 212, respectively.

Injury by fire.—Northern, Central and Southern Circles record increases of 65, 10 and 45 cases, respectively, while the Sind Circle shows a decrease of 140 cases as compared with those of the previous year. Causes of forest fires are discussed under "Protection from fire".

Unauthorized fellings.—The offences under this head show an increase of 1,237 as compared with the previous year, the increase being shared by all Circles except the Southern Circle. The increase in the Northern Circle is attributed partly to the illicit cutting of frost injured standing trees by the Bhils in the Panch Mahals Division and of Malki trees in the East Thana Division and partly to the fact that the subordinates are now made to report every offence seen by them whether the offender is traced or not. The increase in the Central Circle is reported to be due chiefly to (1) illicit cutting of fuel in the neighbourhood of large towns for sale by wild tribes, (2) illicit removal of *anjan* leaves for fodder and (3) greater vigilance being shown by the subordinates in the detection of offences in the West Khandesh and Kolaba Divisions. There was recently a case of assault on a forest guard in the Mahad Range (Kolaba Division) as a result of the increased activity of subordinates in the detection of offences. The Divisional Forest Officer recommended communal punishment by enhancement of grazing fees but the proposed punishment was not considered justified unless the whole community was responsible for the looting. In order to stop wholesale illicit cuttings the help of the Revenue Department is essential and strict warnings by the Collector to the chief offending villagers together with deterrent punishment of the actual offenders are obviously called for. The case of assault is in the hands of the Police now. In order to discourage illicit cutting of fuel and wood for agricultural implements, four depôts were opened in the Kolaba Division and fuel was sold at fixed rates ranging from Rs. 3-4-0 to Rs. 4 per khandy. But only at two depôts was there anything like a real demand for fuel, and very few agriculturists bought timber pieces for agricultural implements. The Conservator, Central Circle, very truly remarks that "no depôt working on an economic basis can ever hope to compete with Thakurs, Katkaris and Mahars who sell forest produce for anything it fetches merely to keep body and soul together". In the Southern Circle unauthorized felling offences have decreased in Kanara but they have increased in the Belgaum and Dharwar-Bijapur Divisions. The decrease in Kanara is attributed to some improvement in the economic situation and also to the fact that the people have begun to understand the limits of the liberal concessions allowed by the Kanara Forest Privilege Rules. The increase in the Belgaum Division is mainly due to the illicit removal of *anjan* leaves by the people in Gokak and Gujnal Ranges owing to drought and consequent failure of fodder supply. Illicit

cuttings of fuel for sale are still being carried on in the Gujnal Range and the Collector of Belgaum once again suggests introduction of communal punishment and liberal grant of rewards for detection of offences. The Divisional Forest Officer and the Conservator report that the people will again be warned and given one more chance to improve before drastic measures are resorted to. The increase in the Sind Circle is attributed mostly to stricter supervision on the part of officers and more frequent patrolling on the part of subordinates of all ranks, which led to the detection of a larger number of offences than in the past.

Unauthorized grazing.—There was an increase of 266 in the total number of offences under this head. The Northern and Sind Circles show increases of 178 and 133 cases respectively while the Central and Southern Circles respectively show a decrease of 25 and 20 cases. Greater activity and vigilance exercised by subordinates resulted in the detection of more offences in the Northern and Sind Circles. The increase in the Sind Circle was partly due to the straitened circumstances of the Maldars (cattle owners) who grazed their cattle without payment of grazing fees. The policy of driving out cattle straying into border-line closed coupes and of taking cognizance of offences in only deliberate trespasses accounts for the decrease in the Southern Circle.

Other offences.—The offences reported under this head show an increase of 212 as compared with those of last year, the Northern, Central and Sind Circles contributing thereto. The majority of cases relate to breaches of transit rules. Stricter application of these rules, particularly in the Sind Circle by the appointment of an extra patrol guard, mainly accounts for the increase.

420 new cases were taken to court during the year—368 cases including 154 cases pending from the previous year were decided, and of these, 338 or 92 per cent. resulted in convictions. 21,748 cases were compounded and compensation amounting to Rs. 99,728 was recovered in 21,089 cases, the average per case being Rs. 4·7 as compared with Rs. 5 in the previous year. Offenders in 659 cases were left off with a warning, and in 3,623, or 13 per cent. of the new and pending cases, the offenders were not detected.

An important case of theft of Government sandalwood trees in the Hangal Range of the Dharwar-Bijapur Division pending from last year ended in the conviction of the accused but the sum of Rs. 300 awarded by the additional Sessions Judge, Dharwar, as compensation has not yet been fully recovered by the Court.

A Ranger and two forest contractors, together with an agent, were prosecuted for theft of wood in the Tatta Range of the Karachi Division. All of them except a contractor were convicted and sentenced to 2 years rigorous imprisonment and a fine of Rs. 1,000 each or in default 6 months rigorous imprisonment in addition.

Out of the 3 cases under the Indian Penal Code and the Indian Forest Act pending from last year in the Shikarpur and Larkana Divisions, one was compromised, another was withdrawn and the offenders in the third case were convicted and fined Rs. 100. Six fresh cases in the Hyderabad Division were taken to court under the Indian Penal Code during the year. Of these, 4 resulted in conviction, 1 in acquittal and 1 is sub-judice. Counter prosecutions were lodged by offenders against 3 forest guards in one case and 1 forest guard in another case. The guards were defended by the Government Pleader in both cases and they were all acquitted.

(b) Protection from fire.

The figures in the subjoined statement compare the result of two fire seasons, 1st June 1934 to 31st May 1935 and 1st June 1935 to 31st May 1936. These figures do not tally with those in Form No. 58 which are for the financial year ending 31st March 1936 :—

Circle.	Fire season of	Area attempted to be protected.	Failures.	Area actually protected.	Percentage of area actually protected.	Cost.	Cost per square mile protected.
		Sq. miles.	Sq. miles.	Sq. miles.		Rs.	Rs.
Northern	1935–36 ..	2,605	101	2,504	96	6,712	2·7
	1934–35 ..	2,605	89	2,516	97	8,570	3·4
Central ..	1935–36 ..	3,918	356	3,562	91	8,127	2·3
	1934–35 ..	3,919	361	3 558	91	8,475	2·4
Southern ..	1935–36 ..	984	30	954	97	7,731	8·1
	1934–35 ..	1,440	52	1,388	96	7,635	5·5
Sind ..	1935–36 ..	493	8	485	98	440	0·9
	1934–35 ..	487	26	461	95	773	1·7
Total ..	1935–36 ..	8,000	495	7,505	94	23,010	3·1
	1934–35 ..	8,451	528	7,923	94	25,453	3·2

There has been an increase in the area burnt in the Northern Circle, which is shared by the Panch Mahals, North Thana and West Thana Divisions. In the Panch Mahals Division, where the increase is the most marked, some fires are reported to have been started maliciously in the Eastern Mahals. Cattle thieves are also responsible for some of the intentional fires in the Eastern Mahals, while persons using the road, cart-tracks, etc., passing through the forests are responsible for

a certain number of accidental fires in the Western Mahals. The early stoppage of the monsoon and consequent long period of hot weather mainly account for the increase in the North and West Thana Divisions.

In the Central Circle the decrease is shared by the East Khandesh, North Khandesh and Kolaba Divisions and is said to be due to an increase in the number of forest roads fire-traced on both sides in the Satpudas as well as to the fire-tracing of cart tracks in coupes. There was, however, an increase of about 16,000 acres in the West Khandesh and Satara Divisions, the causes being said to be (1) ineffective firelines, (2) deliberate incendiarism by villagers in pursuit of game or on account of mutual feuds between neighbouring villages and (3) carelessness on the part of cultivators while burning rabs.

The Southern Circle shows a decrease in the area burnt as compared with the previous year, all Divisions except the Dharwar-Bijapur Division contributing thereto. The increase in the Dharwar-Bijapur Division is said to be due to the unusually dry and hot summer and the almost complete absence of winter rains. In all other Divisions a favourable monsoon combined with extra vigilance on the part of the subordinates in fire protection work helped to reduce the areas burnt.

In April last, a serious fire started in compartment 20 of Nagargali high forests in the Belgaum Division. A strong east wind carried the fire over the 100 feet fire line right through the adjoining regeneration areas. In spite of all possible efforts of the protective staff, the teak plants sustained some damage, 9 per cent. of the plants being affected. All the damaged plants were cut back and are now progressing satisfactorily. The origin of some of the fires in the Belgaum Division is suspected to be due to people organizing illicit shikar parties who start fire in the jungle in order to capture or kill certain kinds of animals. In 2 such cases in the Nagargali Range the offenders were detected and were successfully prosecuted. This, it is hoped, will have a salutary effect in future.

In the Eastern Division Kanara about 667 acres of plantations were burnt as against 1,149 acres burnt last year. Though this improvement is welcome, the Divisional Forest Officer remarks as follows:—

> "100 per cent. protection of plantations is essential if the efforts made and the money spent are eventually to give an adequate return. With regard to protection of non-plantation areas only a continuous policy of education combined with rewards to villages for good fire protection and withdrawal or reduction of privileges for bad fire protection can be successful."

The improvement in the results of fire protection in the Sind Circle is attributed to the absence of severe frost, which keeps the grass in a semi green condition and therefore less inflammable. Last year's educative policy and the grant of rewards on the one hand and the

suspension of free grazing privileges on the other, for good and bad fire protection, are said to have produced a good effect. Conferences in connection with forest incendiarism were held at Shikarpur and Rukh and forest maldars, abadgars, contractors and Zamindars were made to understand that fires in forests were not only detrimental to Government interests but were harmful to public interests also.

For successful fire protection total remission of grazing fees was granted to 7 non-forest villages in the Nawapur Range and remission of half the usual rate of grazing fees was sanctioned to one village in the Mandvi Range. For bad fire protection the privilege of free grazing was withdrawn from 3 villages, and grazing fees were doubled in 2 villages in the West Khandesh Division. The Conservator, Central Circle, remarks that communal punishment is but a crude method of dealing with fire and at times works harshly on the innocent. The Divisional Forest Officer has been asked to go into this matter and to endeavour to devise more efficient methods of fire protection by enlisting the help of the villagers. In the Southern Circle 21 villages enjoyed the concession of free grazing as a reward for good fire protection and the rate of grazing fee was reduced in the case of 11 villages in the Eastern Division Kanara. In the Sind Circle some Zamindars were granted rewards at the Silver Jubilee Durbar held at Sukkur in May 1935, for satisfactory assistance rendered in the matter of fire protection.

(*c*) *Protection from cattle.* (Forms Nos. 60 and 61).

The forest areas open and closed to grazing were as follows :—

	Sq. miles.	Per cent.
Closed to all animals for the whole year ..	1,454	10·2
Closed to all animals for part of the year ..	330	2·3
Open to all animals except browsers for the whole year.	9,492	66·9
Open to all animals except browsers for part of the year	17	0·1
Open to all animals for the whole year	2,847	20·1
Open to all animals for part of the year ..	52	0·4
	14,192	....

The area open to grazing of horned cattle throughout the year was 87½ per cent. of the Presidency forests. The reduction in the period of closure from 10 to 5 years was continued in the 3 Thana Divisions and the Panch Mahals Division except in cases where the growth was retarded by fires. In other parts closure was relaxed where necessary.

Owing to scanty rain in parts of the Sakri Range, West Khandesh Division, closed forests were thrown open to grazing till end of June 1935 as a temporary measure.

Due to scarcity of fodder in the Gokak and Gujnal Ranges, Belgaum Division, collection of *anjan* leaves for fodder by the villagers from Government forests was sanctioned by the Commissioner, Southern Division, and subsequently approved by Government. Several closed coupes were also thrown open to grazing.

2,517,981 animals are recorded as having grazed in the forests of the Presidency as compared with 2,426,021 in the previous year and 2,438,415 the average of the last 3 years. Of these, 1,919,391 were horned cattle, 576,558 sheep and goats, 2,873 camels and 19,159 other animals. The number of animals admitted to graze free was 597,719 as against 573,282 in the previous year.

The grazing fees collected during the year amounted to Rs. 5,72,344 as against Rs. 5,56,790 in the previous year, the value at full rates being Rs. 23,34,786.

There was an increase in the number of cattle admitted to graze as compared with the last year. The increase is shared by all Circles except the Southern Circle. In the Northern Circle the increase is attributed to the fact that, unlike in 1934–35 when there was a shortage of fodder, no shepherds migrated to Berar during the year under report. The causes for the increase in the Central Circle were (1) admission of large flocks of sheep and goats belonging to Thilaries to graze in the forests of the Sakri Range, (2) revised definition of professional graziers in the Satara Division giving concession to real agriculturists who consequently brought back their flocks of sheep and goats sent elsewhere in the past for grazing and (3) immigration of a greater number of cattle of professional graziers into North Khandesh for grazing. The increase in the Sind Circle is reported to be mainly due to greater vigilance of the subordinates shown in grazing fee collection. In the Southern Circle, due to the scarcity of fodder grass in the forests, herds of cattle migrated to non-forest villages in the Dharwar-Bijapur and Belgaum Divisions. Exemptions from payment of fees were claimed in respect of a considerable number of cattle on the grounds of stall feeding and grazing in private lands. These reasons account for the decrease in the Southern Circle.

The number of cattle impounded was 92,574 as compared with 95,068 in the previous year and 95,362 the average of the past 3 years. The decrease is shared by all Circles except the Central Circle and was due to (1) difficulty experienced in impounding cattle in the West Nasik Division, (2) impoundings having been resorted to only in persistent and deliberate trespasses in the Southern Circle, and (3) good *abkalani* and sufficiency of fodder being available outside forests in the Sind Circle leaving less temptation for cultivators to let their cattle stray into forests.

(*d*) *Protection against injuries from natural causes.*

Vegetable pests.—The eradication of climbers, lantana etc. was carried out partly through contractors and forest guards and partly by paid

labour. Out of 195 acres given out for temporary cultivation in the Poona Division on condition of sowing the area with teak and other species after removing lantana therefrom, 95 acres were relinquished by the lessees on the expiry of the contract period. Though lantana was uprooted and burnt from time to time, the pest is said to be still persisting. Some more area is again given out for cultivation under the same conditions. In the Satara Division a similar attempt was made but the villagers gave up the area when they found how very difficult it was to eradicate the pest. The experiment of the eradication of prickly pear by means of the Cochineal insect has been most successful in the Poona, Satara, Belgaum and Dharwar-Bijapur Divisions. *Loranthus* attack in some teak plantations of Kanara was checked by removing the affected stems or branches and burning them.

Animal pests.—Elephants, bison, sambhar, monkeys, pigs, porcupine, rats and hares were as usual responsible for a certain amount of damage in young plantations. In Kanara Western Division efforts are being made to lessen the damage by porcupine by offering rewards at Re. 1 for each porcupine killed.

Insect pests.—It is reported that the leading buds of teak seedlings were damaged by an insect (identified as Cock Chafar grubs, *Lachno Sterna* species) in the East Thana Division and that many teak seedlings succumbed to the ravages of root eating larvae in the West Thana Division. In the Sind Circle defoliators were responsible for a considerable amount of damage to *kandi* in the flowering or early fruiting stages, with the result that the seed crop was a complete failure. Attacks of pith borers were noticed in some teak plantations in the Kanara Eastern Division. The damaged plants were cut back. Crickets caused some damage in new teak plantations in Kanara and in current regeneration areas in the Sind Circle.

Frost and erosions.—No damage by frost was recorded anywhere during the year. In Sind 8 square miles of riverain forest area were eroded by the action of the river Indus. A sum of Rs. 30,403 was realized by the sale of material from eroded areas, while 2,805 acres were exploited in anticipation of erosion, the material resulting therefrom being sold for Rs. 56,187.

CHAPTER III.

SILVICULTURE.

1. System of Management.

The area in charge of the Forest Department comprises 11,931 square miles of which 8,416 square miles are managed, as detailed below, under various silvicultural systems according to the silvicultural requirements

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Erosion in a tree-less tract in Khandesh (between Dhulia and Jalgaon.)

and economic value of the crop on the one hand and the agricultural and domestic needs of the people on the other :—

Silvicultural systems.	Area in square miles.	Percentage of the total area.
1. Clear felling	4,128	34·60
2. Silviculture	728	6·10
3. Uniform	128	1·08
4. Selection cum improvement	365	3·06
5. Improvement	604	5·06
6. Coppice with standards	1,362	11·41
7. Simple coppice	517	4·34
8. Other	584	4·89
Total under silvicultural management ..	8,416	70·54
Protection, grazing and unallotted	3,515	29·46
Grand Total ..	11,931	100·00

2. General Progress of Regeneration and Afforestation. (Form No. 62.)

(a) *Mainly natural.*

The greater proportion of the area exploited annually in the form of coupes is regenerated naturally by coppice and by the germination of self sown seed, but this latter manner of reproduction is not depended upon to produce a new crop since many undesirable species would oust and replace the better classes of trees, while scattered seedling growth could hardly be expected to compete with the faster growing coppice shoots, hence artificial means on a fairly intensive scale are adopted to supplement the efforts of nature.

A considerable number of valuable species is raised to ensure improvement in the general composition and stocking of the future crop.

The area so treated necessarily varies according to the actual extent of clearing made, since in some instances for want of demand or facilities for extraction a few coupes remain unsold. This year the area under mainly natural regeneration both concentrated and not concentrated aggregated 69,983 acres as against 61,571 acres last year and was distributed among the four Circles as under :—

Northern Circle	23,965	acres.
Central Circle	25,570	,,
Southern Circle	13,405	,,
Sind	7,043	,,
Total ..	69,983	,,

(i) *Concentrated.*

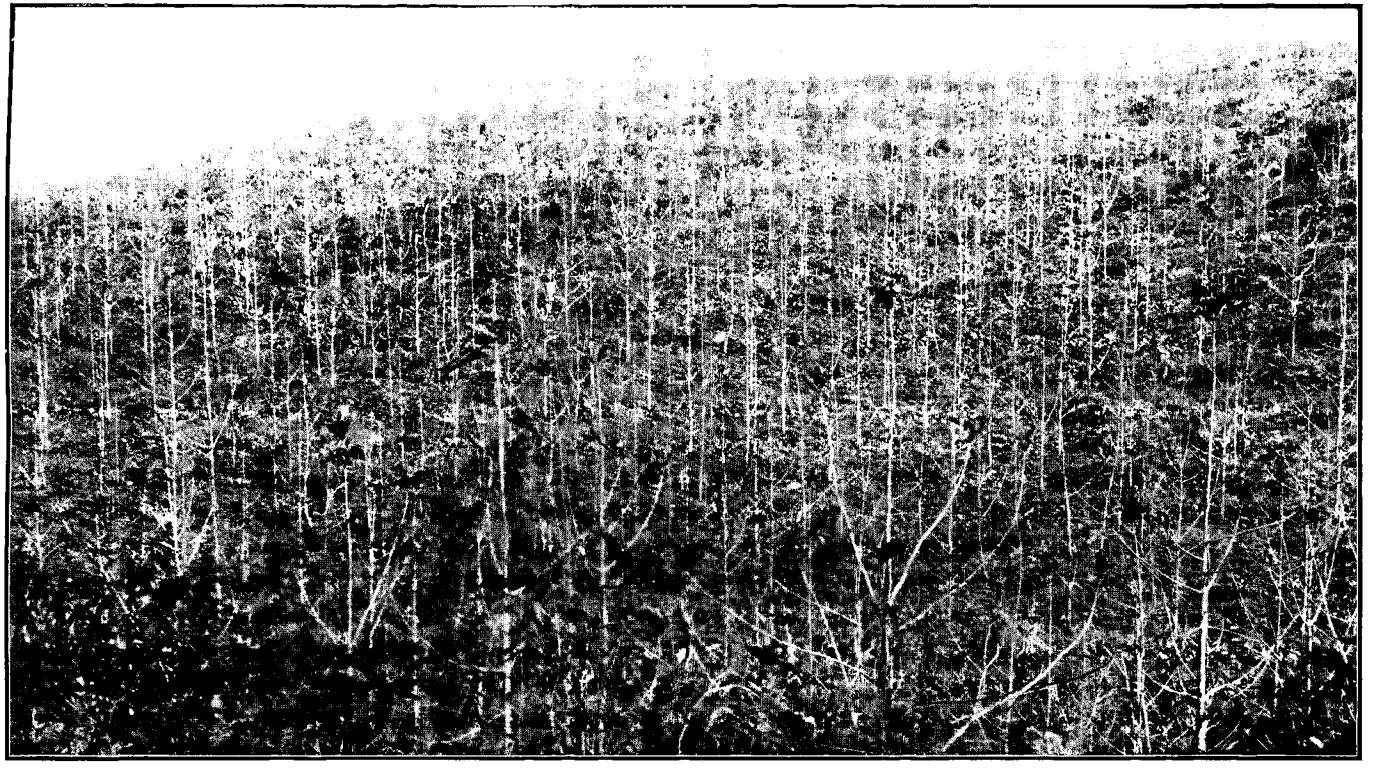
Valuable species such as teak, sandal, *khair*, *babul*, *tiwas*, *shivani*, etc. were introduced either by dibbling seed or transplanting seedlings entire or in the form of root and shoot cuttings in burnt patches and charcoal kiln sites in localities providing the greatest scope for such operations; the results obtained are described below :—

Division.	Species.	Number of germinations and transplants or root and shoot cuttings put in.	Survivals on 31st March 1936.
North Thana ..	Teak and suitable junglewoods.	413,785	348,099
East Thana	Do. ..	246,476	193,608
West Thana	Do. ..	355,703	298,705
West Nasik	Teak	57,043	36,543
East Khandesh	Teak and valuable junglewoods.	32,703	11,040
Kolaba	Teak	879,204	557,279
	Junglewoods	70,104	36,623
	Bamboos	1,182	617
Satara	Sandal	100,665	55,486

In East Khandesh it is reported that results in the case of teak were disappointing owing to defective technique, whereas in the Pen and Karjat Ranges of the Kolaba Division the excellent results secured are attributed to the personal interest taken by the staff. In the Southern Circle satisfactory results were obtained in all divisions especially Belgaum where practically cent. per cent. success is reported.

In East Nasik, West Khandesh, Kolaba and Dharwar-Bijapur, where the agri-cum-forestry system is now an established feature of artificially restocking depleted areas and blanks, satisfactory progress was made. East Nasik reports an increase from 100 acres in 1932–34 to nearly 3,000 acres in the year under report.

By this method the cultivators get, rent-free, a patch of suitable virgin soil, which in yielding them a satisfactory crop fully compensates them for their labour in raising and tending, alongside with their field crops, certain tree species, the seed of which is supplied to them by the department. The original growth on such areas in most cases is too sparse to yield enough material for burning and much of the cultivation is in consequence done without the use of fire. This term "agri-cum-forestry" was coined several years ago and is intended to convey the idea of silvicultural operations in combination with agricultural ones. When fire *is* used it is equivalent to controlled *kumri* and is then simple *taungya*, but when there is no facility for providing a burn, the operation cannot be called kumri. Both forms are practised and as it is impraticable to differentiate between the two a general term embracing both is convenient and has been adopted.



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Teak Plantation 1932—Mandurli—
Northern Division Kanara.

This system has served to improve the lot of the poorer landless classes especially the Bhils, Mahars, Konkanis, Warlies, Thakurs, Katkaries and other similar tribes and at the same time it has proved beneficial to Government in that a considerable amount of necessary useful regeneration work is done free of cost.

In Sind "mainly natural" is the only form of regeneration relied on for the reboisement of felled areas lying above flood level. Here it is reported that reproduction by coppice from *lai*, *kandi*, *bahan*, etc., and naturally sown seedlings of babul from seed ejected by goats, camels and cattle was satisfactory.

In Sukkur artificial sowings were resorted to to supplement natural reproduction. In Hyderabad and Karachi owing to a deficiency in sub-soil moisture there were several casualties.

The canals-system having cut off direct river floods is in some measure responsible for considerable mortality among seedlings, and although negotiations were started in Karachi for controlled irrigation of the inland forests with surplus water from the barrage canals, it was not possible to come to any definite arrangement with the Public Works Department.

The inundation of the year is reported to have been good in comparison with last year and a little below normal in duration, the area flooded being 358,118 acres against 294,900 acres last year and 555,547 acres the year before.

(ii) Not concentrated.

In the Panch Mahals, East Nasik and East Thana Divisions, seeds of teak, *mhowra*, *nimb*, mango and other useful species were sown in blanks and along the banks of nallas, in pits, furrows, etc., with fairly good results. Sandal dibbled under bushes in favourable situations in the Poona and Satara Divisions gave satisfactory results particularly in Wathar and Visapur Rounds of the Satara Division.

(b) Mainly artificial.

Purely artificial regeneration was attempted in an area of 30,796 acres or 48 square miles, i.e., 798 acres in the Central Circle, 1,429 in the Southern Circle and 28,569 in the Sind Circle.

The Conservator's reports describing the work done are reproduced below :—

Central Circle.—" Artificial plantations in babul and casuarina coupes and under agri-cum-forestry system were as under :—In the exploited babul coupes in the Poona and East Khandesh Divisions babul seed was sown after ploughing. The plantation work was done departmentally in East Khandesh and partly through departmental agency and partly under agri-cum-forestry system in the Poona Division. The results obtained were generally satisfactory. In the Plains Working Circle

of the Taloda working plan in the North Khandesh Division artificial regeneration was carried out in 5 coupes at a cost of Rs. 275-8-0. The plants which survived at the close of the year were 15,310."

"Casuarina coupes 11 and 12 of Akshi in the Alibag Range were planted during the year."

Southern Circle.—Kanara Northern Division—"Intensive regeneration of teak was carried out as under :—

Working plan.	Area planted.	Method.
(1) Bhagwati High Forest working plan.	122·0 acres.	With an espacement of 12′×6′
(2) Supa High Forest plan ..	162·0 „	With an espacement of 9′×9′
(3) Gund Working plan ..	92·0 „	Do. do.
(4) Nagzari working plan ..	39·0 „	Do. do.
(5) Kulgi Range ..	4·0 „	Do. do.
(6) Dandeli Range ..	8·0 „	With an espacement of 6′×6′.
Total ..	427·0	

"Except Gund, where growth over about 25 acres was much below the average, all the other plantations were successful and the maximum height at the end of the first season was about 6′ and the average 4′.

"The condition of older plantations was throughout very satisfactory. Some plants in Tatwal plantations affected by fire were cut back and the regrowth is very promising."

Kanara Eastern Divison.—"The following areas were regenerated with teak on an intensive scale and the general condition of the plantations was good :—

Yellapur Range ..	.. 149 acres	with an espacement of 6′ × 6′	
Kirwatti Range ..	.. 100	Do.	do.
Mundgod Range ..	.. 50	Do.	do.
Katur Range ..	.. 48	Do.	do.
Total	.. 347		

"An area of about 64 acres of the Nirsol Slopes was subjected to natural regeneration from stool and coppice shoots."

Kanara Western Division.—"About 28 acres of the casuarina plantations at Arge and Haldipur were planted with casuarina plants 8 months old raised in nurseries with an espacement of 12′×12′ square and 12′×12′ triangular. An area of about 130 acres in the Ramanguli-Ankola High Forests was planted with teak stumps mixed with a few stumps of *honne, sisum* and *matti* seedlings.

"Out of the area of 379 acres of Ankola-Kumta, Honavar-Bhatkal Below-ghat inland forests, 158 acres were regenerated departmentally and 221 acres through *Ragi* cultivators, the species used being teak and the principal junglewoods.

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Teak Plantation 1929—Bomanhalli—
Northern Division Kanara.

" The condition of all the plantations was generally satisfactory.

" *Belgaum.*—In the regeneration area No. A-10 of the Nagargali Range, about 23 acres were regenerated with 28,476 teak stumps. The plantation was a success though about 14,320 plants damaged by fire were cut back and are growing well. About 31 acres were subjected to natural regeneration from coppice.

" The total area of artificially raised teak plantations is as follows :—

Division.	Area to end of 1934–35.	Area added during the year.	Area written off as failure in previous years.	Area written off as failure during the year.	Net total area successfully regenerated.
	Acres.	Acres.	Acres.	Acres.	Acres.
Northern Division, Kanara ..	4,703	427	457	..	4,673
Eastern Division, Kanara ..	6,050	347	1,540	..	4,857
Western Division, Kanara ..	9,398	509	424	..	9,483
Belgaum	279	23	64	..	238
Total ..	20,430	1,306	2,485	..	19,251

Sind Circle.—" Pre, mid and post *abkalani* sowings of *babul* and *kandi* were carried out in coupes, *kachas* and blanks, as usual. The methods adopted being—

(1) Patches, (2) mounds, (3) dibblings, (4) drilling, (5) ploughing, (6) broad-casting and (7) trenching.

All Divisional Forest Officers report that the results of the operations were on the whole satisfactory where water was sufficient.

" The Divisional Forest Officer, Larkana, states that *tali,* mulberry and several Presidency seeds were sown during the year along trenches 10' apart and irrigated by canal water.

" The total area under ' mainly artificial ' was 28,569 acres sown with 2,948 maunds of babul and kandi seed."

(c) *Afforestation.*

Forest guards did artificial plantations in an area of 8 acres in selected localities in the unorganized forests of the Satara Division and teak, *nimb, bhendi,* mango, sandal, *khair, dhawada,* etc., were sown on raised mounds. The results obtained were fairly satisfactory.

The area given out in Sind for temporary cultivation, in order to prepare land for reafforestation during the next or subsequent years amounted to 14,665 acres as against 11,341 acres during 1934–35 and the assessment realised was Rs. 55,000.

Most of these areas are either *kacha* lands on which the flood water remains at too high level for the introduction of tree growth at present or recently felled coupes containing rank grass, and such areas are given out for a year's cultivation in order to work the soil and clear the area of *lai* etc. before sowing with *babul*. Blanks which have failed to respond to direct methods from various causes are also treated in this way.

The Divisional Forest Officer, Sukkur, reports that blanks and previously cultivated areas were sown with *babul* and *kandi* seeds with the object of afforestation. Results were excellent except in portions of Pano-Akil Range.

The Divisional Forest Officer, Larkana, states that out of 1,500 acres cultivated with *khariff*, 468 acres were receiving assured water supply from the Barrage canals and the remaining 1,032 acres were in non-assured areas.

To 555 acres of *tali* (*Dalbergia sissoo*) remaining at close of last year 15 and 12 acres were added in the Larkana and Sukkur Divisions respectively at a cost of Rs. 9. The balance at close of the year therefore was 582 acres.

In all 1,424 maunds of seed were sown in *kachas*, blanks, erosion strips and cultivations aggregating 11,482 acres and the results obtained were good.

3. Tending of the growing stock, etc.

Northern Circle.—In the Panch Mahals Division cleanings were carried out in coupe No. 3 and also in coupe No. 4 of Halol Range. Arrear thinnings were also carried out, according to the sanctioned programme, at a cost of Rs. 3,809. The resultant material was sold for Rs. 11,086.

In the three Thana Divisions cleanings were carried out in all 5-year old coupes as provided for in the revised working plan. First thinnings were carried out in 109 coupes of the North Thana Division, 84 coupes in the East Thana Division and 76 coupes in the West Thana Division. In the North Thana Division all the 109 coupes were worked departmentally at a cost of Rs. 6,270. The resultant material from 89 coupes was sold for Rs. 10,050 while that from 20 coupes remained unsold. In the East Thana Division 57 coupes were sold to purchasers for Rs. 4,370 and the remaining 27 coupes together with past years arrear coupes were worked departmentally at a cost of Rs. 582. In the West Thana Division 60 coupes were sold to purchasers for Rs. 6,261–0–0, 6 were worked departmentally at a cost of Rs. 145 and 10 coupes were felled by villagers who were permitted to remove the resultant material for their labour as it was unsaleable.

In addition to the above, second and third thinnings were carried out as laid down in the revised working plan. The number of

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Babul Plantation—East Nasik Division
(Raised by means of Agri-Cum-Forestry System.)

II and III thinning coupes sold and the revenue realised are tabulated below :—

Division.	Number of coupes sold.	Price realised.
		Rs.
North-Thana	91	2,09,158
East Thana	102	90,029
West Thana	114	98,883
Total ..	307	3,98,070

5 coupes in North Thana, 24 in East Thana and 9 in West Thana remained unsold.

In the West Nasik Division the Badgi plantations which were cleaned and thinned in the years 1932–33 and 1933–34 were again threatened with very serious damage from bamboos and junglewood. They were therefore again cleaned during the year under report at a cost of Rs. 107. The resultant material was sold for Rs. 31.

Central Circle.—Climbers were cut in all divisions through guards agency wherever practicable.

East Khandesh.—Thinnings were carried out in 11 coupes of teak pole working circle in Chopda and Yawal Ranges at a cost of Rs. 400. The resultant material remained unsold. It will be sold after the monsoon. The work of felling inferior species interfering with valuable species was carried out in 17 coupes at a cost of Rs. 173. The resultant material remained unsold at the close of the year.

North Khandesh.—Thinning and cutting back operations were carried out during the year in Taloda and Shirpur East Ranges at a cost of Rs. 295.

West Khandesh.—23 coupes were thinned departmentally at a cost of Rs. 611 and the resultant material was sold for Rs. 1,143 ; 4 coupes were sold to contractors for Rs. 559 and 7 coupes were thinned by the villagers in return for the resultant material.

Poona.—Thinnings were carried out in 37 coupes of the Fuel Working Circle at a cost of Rs. 2,178 and the resultant material amounting to 136,549 cubic feet was sold for Rs. 4,880. Operations for the exploitation of dead, dying and wind fallen trees in the *babul* areas were carried out at a cost of Rs. 845 and the resultant material amounting to 70,690 cubic feet was sold for Rs. 3,401.

Kolaba.—Weedings were done in coupes planted in 1934–35 and 1935–36 partly through guards' agency and partly through cultivators.

57 coupes (3-year old) and 68 coupes (7-year old) due for cleaning according to the working plan were all cleaned. Out of these, in 95 coupes the work was done free through villagers, who in return for it, were allowed to remove any resultant material that was useful to them. The remaining coupes were cleaned departmentally at a cost of Rs. 234, revenue realised from the resultant material being Rs. 48 only.

Out of the 99 coupes due for thinning during the year and 3 arrear coupes, 37 were sold standing for Rs. 991, 20 were worked departmentally

at a cost of Rs. 312, 10 were worked with the help of villagers free and 18 were left untouched as thinnings were not needed in them. The 20 coupes worked departmentally gave only 406 cubic feet of teak and 10,550 cubic feet of fuel. This together with the last year's material was put up for sale but only material amounting to 700 cubic feet of teak and 9,675 cubic feet of fuel was sold for Rs. 314. The remaining material, if not sold, will have to be written off.

Two casuarina coupes were also thinned and the marked trees were sold standing for Rs. 126.

Satara.—Cleanings were carried out where necessary in 5 year old coupes. The work was done by the staff. Cutting back of illicit stumps was done through guards' agency in the forests of 37 villages.

Southern Circle.—Cultural operations were carried out wherever necessary and to the extent funds permitted. 18 compartments in Kanara Northern Division, 6 coupes and parts of 3 compartments in Kanara Eastern Division, 5 compartments in Kanara Western Division, 1 in Belgaum Division and 16 coupes in the Dharwar-Bijapur Division were under improvement fellings. Cutting of climbers, creepers, etc., received proper attention.

Thinnings were undertaken in 2,502 acres of plantations and teak pole coupes in the Kanara Northern Division, in 54 coupes and plantations in compartments in the Kanara Eastern Division, in 122 acres of the casuarina plantations and 804 acres of the teak forests in the Kanara Western Division, in 349 acres of teak forests together with 2 plantations in the Belgaum Division and in 990 acres of the teak pole and scrub forests of the Dharwar-Bijapur Division. Saleable material obtained from the operations realised a revenue of Rs. 20,792 against an expenditure of Rs. 5,823, the net surplus being Rs. 14,969.

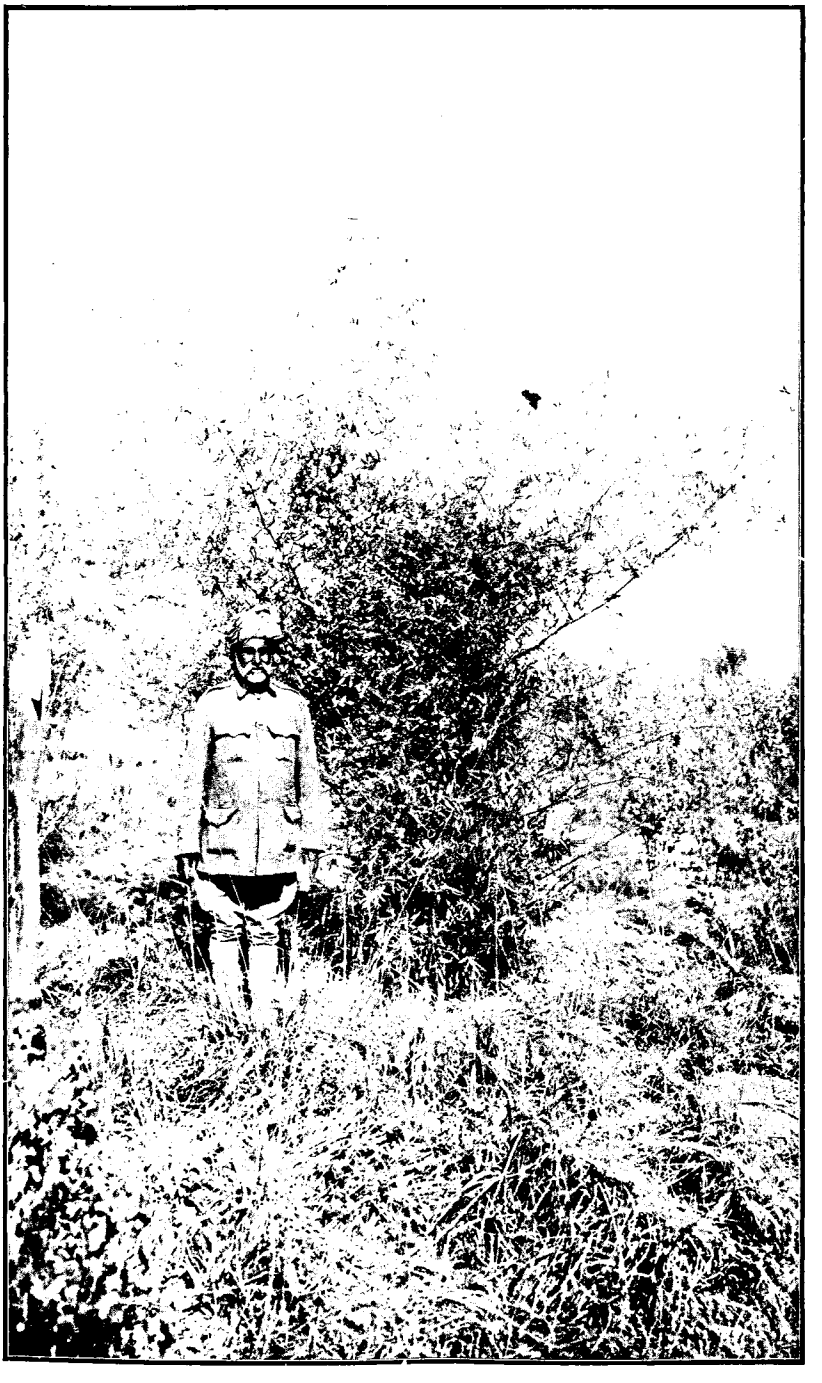
Sind Circle.—Much useful work was done in the form of cleanings and spacing of stems in dense young *babul* growth, freeing of young *babul* from inferior species, cutting back of malformed *kandi* stems and weeding and stubbing of grass in *tali* plantations.

Thinnings were carried out in all Divisions except Shikarpur and consisted, as usual, of the removal of suppressed, dead and fallen stems and branch-wood. Sapling thinnings (stick cleaning) were carried out over an area of 400 acres in the Karachi Division and 199 acres in the Hyderabad Division, free of cost.

Thinnings and cleanings were also done in the *tali* plantations in the Sukkur Division.

The area dealt with, material obtained and the revenue realised from thinnings are given below :—

Area exclusive of sapling thinning	6,777 acres.
Resultant material—	
	Cubic feet
Timber	1,980
Fuel	2,558,105
	Rs.
Revenue realised	89,166
Expenditure	247
Net revenue	88,919



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Kassimshah Forest –
Introduction of bamboos in Sind.

CHAPTER IV.

EXPLOITATION.

(*a*) SYSTEM OF MANAGEMENT.

(*i*) *Major Forest Produce.* (Form No. 63.)

The areas under various systems of exploitation in force are given under (1) System of management in Chapter III.

The major produce was largely extracted through the agency of purchasers, departmental operations being confined to exploitation of valuable timber from the high forests in the Southern Circle and of fuel from coupes for firewood depôts in the Central Circle. Sandalwood was as usual extracted and brought to depôts for conversion and sale.

(*ii*) *Minor Forest Produce.* (Form No. 64.)

The minor forest produce was mainly farmed out or sold on permits. 89 *khandis* of *hirda* were collected departmentally on the share system in the Poona Division and were sold for Rs. 1,002.

(*b*) AGENCY OF EXPLOITATION.

(*i*) *Departmental Agency.*

The following is a comparative statement of major and minor produce extracted departmentally during the two years 1935–36 and 1934–35.

Circle.	Year.	Major Forest Produce.			
		Timber c. ft. in thousands.	Fuel c. ft. in thousands.	Total c. ft. in thousands.	Sandal-wood value.
					Rs.
Northern	1935–36 ..	139	558	697	..
	1934–35 ..	149	585	734	..
Central	1935–36 ..	17	454	471	1,047
	1934–35 ..	7	538	545	1,920
Southern	1935–36 ..	616	1	617	1,22,160
	1934–35 ..	713	..	713	1,00,596
Sind	1935–36 ..	4	137	141	..
	1934–35 ..	5	66	71	..
Total ..	1935–36 ..	776	1,150	1,926	1,23,207
	1934–35 ..	874	1,189	2,063	1,02,516
Difference ..	....	—98	—39	—137	+20,691
Percentage of total outturn from all sources ..	....	11	2	3	100

Circle.	Year.	Minor Forest Produce.			
		Bamboos value.	Grass and grazing value.	Other value.	Total value.
		Rs.	Rs.	Rs.	Rs.
Northern	1935–36 ..	5	..	..	5
	1934–35 ..	161	..	1	162
Central	1935–36 ..	..	..	1,002	1,002
	1934–35 ..	..	..	1,292	1,292
Southern	1935–36 ..	5	..	98	103
	1934–35 ..	..	..	72	72
Sind	1935–36 ..	..	..	565	565
	1934–35 ..	..	..	640	640
Total ..	1935–36 ..	10	..	1,665	1,675
	1934–35 ..	161	..	2,005	2,166
Difference ..	....	—151	..	—340	—491
Percentage of total outturn from all sources ..	....	..	..	..	..

In the Northern Circle the decrease under timber and fuel is due partly to the poor outturn obtained from the first thinning coupes in the North Thana Division, and partly to the fact that a less number of thinning coupes were worked departmentally in the West Thana Division than in the previous year.

No regular departmental operations are carried out in the Central Circle other than the exploitation of coupes for fuel depôts at Matheran, Mahableshwar and Panchgani and the silvicultural operations. The outturn under major produce is therefore fluctuating. There was less demand for fuel and charcoal at Mahableshwar and Panchgani depôts owing to keen competition by individuals bringing supplies of *babul* wood and charcoal from *malki* lands but this supply is diminishing rapidly. Fewer sandal trees were sold and a lower price was offered for *hirda* in the Poona Division. These reasons account for the decrease under sandalwood and minor produce.

In the Southern Circle, the yield was smaller from the areas under selection-cum-Improvement fellings in the Kanara Northern Division and from the Yellapur-Mundgod Teak High Forests in the Kanara Eastern Division. Cuttings under the new plan in the Eastern Division, Kanara have now been limited by fixing the outturn by volume instead of by area. These are the main reasons for the decrease under timber. A greater number of sandalwood trees were exploited and this fact accounts for the increase in revenue from sandalwood.

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Magnificent Teak Log of over 2 tons from the Nagzari Valley—
Kanara Northern Division.

Fewer departmental operations were carried out in Sind for supply of timber to Railway and other departments. The outturn of fuel increased owing to exploitation of erosion strips, thinning operations, and improvement and other fellings.

Timber Depôts.—There are at present 5 principal depôts in the Presidency, 1 in the Northern Circle at Nasik Road, and 4 in the Southern Circle at Dandeli, Kodibag, Hattikeri and Kirwatti. The average prices realized by sales at these depôts are compared in the following table :—

Kind of timber.	Average rate per khandi of 12·50 c. ft.			
	Nasik Road Depôt.		Dandeli Depôt.	
	1935–36.	1934–35.	1935–36.	1934–35.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Teak	....	....	27 9 10	22 11 0
Matti	....	....	15 14 0	11 4 0
Nana	....	....	18 6 9	10 7 1
Honne	....	....	19 1 1	12 10 11
Sissum	....	....	15 6 10	11 6 1
Heddi	....	....	15 4 0	10 10 8
Karimuttal	....	....	18 0 8	....
Other junglewoods ..	....	....	12 14 11	9 1 4
Teak battens	18 12 0	....	23 0 1	17 6 1
Teak scantlings	19 9 6	15 11 0	23 11 11	18 15 1
Teak planks	....	....	39 1 3	29 3 8
Teak boards	14 10 1	....	....	....

Kind of timber.	Average rate per khandi of 12·50 c. ft.					
	Kodibag Depôt.		Hattikeri Depôt.		Kirwatti Depôt.	
	1935–36.	1934–35.	1935–36.	1934–35.	1935–36.	1934–35.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Teak	19 8 4	19 2 5	19 9 6	20 2 3	23 2 10	16 10 3
Matti	12 9 9	14 5 9	..	..	15 1 8	7 14 4
Nana	..	..	..	..	..	10 0 0
Honne	..	15 0 8	..	..	19 10 11	11 8 6
Sissum	17 15 6	18 13 0	..	8 1 3	9 9 9	11 10 6
Heddi	..	..	..	..	11 4 2	6 3 5
Karimuttal	..	..	..	..	21 8 7	16 6 10
Other junglewoods ..	..	..	..	..	9 5 4	..
Teak battens	..	..	..	..	23 3 11	18 8 4
Teak scantlings	..	..	..	..	24 8 9	19 14 0
Teak planks	..	..	..	..	33 12 6	25 13 3
Teak boards	..	..	..	..	..	..

There is at present very little demand for sawn timber at Nasik Road. As contractors do not come forward to purchase the timber stocks at reasonable rates, an endeavour is being made to sell them to retail purchasers at fixed rates.

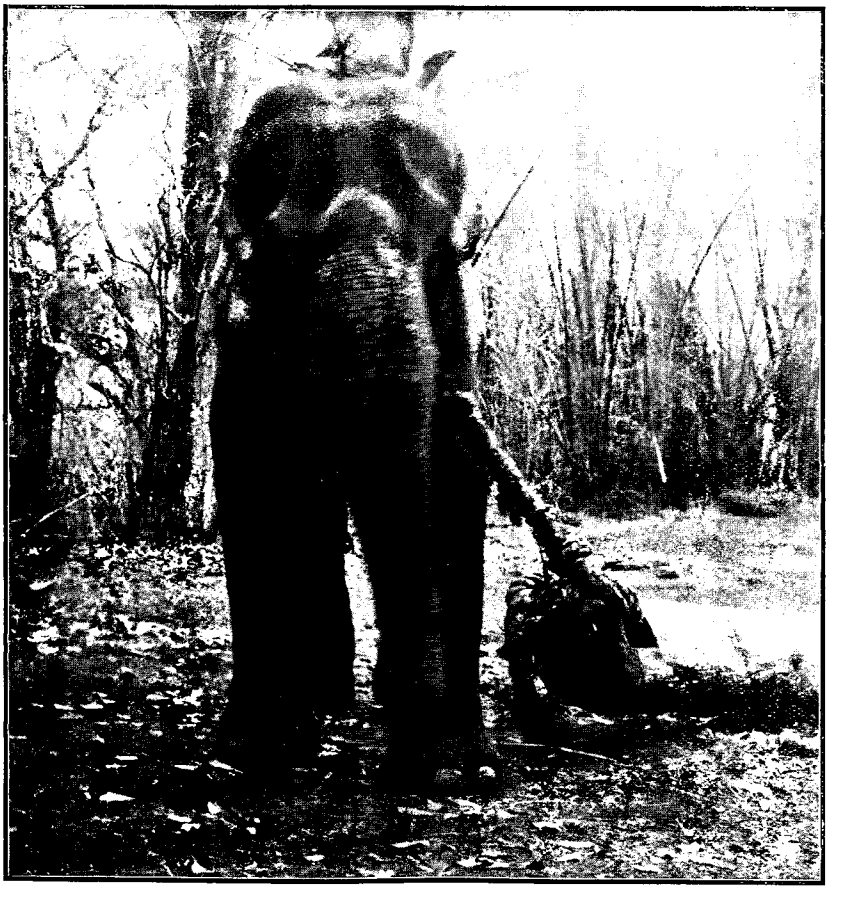
The sudden rise in prices for timber in the Dandeli and Kirwatti Depôts is reported to be more of a speculative character than an indication of any marked improvement in market conditions.

The average prices realized for sandalwood at Dharwar, the chief sandalwood depôt in this Presidency, are compared with those obtained in Mysore and Madras in the following table:—

Year.	Average price per ton.			Remarks.
	Dharwar.	Mysore.	Madras.	
	Rs.	Rs.	Rs.	
1933-34 ..	968	843	896	
1934-35 ..	816	756	700	
1935-36 ..	776	Not communicated.	687	

There has been a steady decline in the prices of sandalwood since 1930-31. The average price realized from 1917-18 to 1929-30 in this Presidency was Rs. 1,322 per ton, based on the total quantity sold. After that period the price has progressively fallen. Enquiry shows that apart from the general trade depression, the main cause of the fall in prices is considered to be due to serious competition of inferior Australian sandalwood with Indian sandalwood in the world markets including Indian, and the immunity from tariff restrictions which the former enjoys in Empire markets as a result of concessions made at the Imperial Conference. The result has been a serious fall in sandalwood revenue in this Presidency and other sandalwood growing tracts in India, which is bound to act as a check against the development of this valuable forest produce.

Firewood Depôts.—All depôts in the Northern and Southern Circles were worked by contractors. The Government fuel depôt at Igatpuri was closed as a number of private depôts have been opened there. In the Central Circle the depôts at Matheran and Mahableshwar were worked departmentally while that at Panchgani was worked by a contractor who was supplied with fuel cut departmentally. In order to compete with the cheap supply of *babul* fuel from *malki* lands at Panchgani and Mahableshwar, it is being considered whether the rates for Government fuel should be brought down, as long as the supply from this private source lasts. As a result of agitation in a local newspaper in Kanara, engineered probably by purchasers of coupes who could not dispose of their inferior fuel in areas served by the firewood depôts, the possibility of discontinuing some of the depôts is being considered.



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Elephant dragging a log—
Kanara Eastern Division.

(ii) Purchasers.

The following table compares the outturn of major and minor produce removed by consumers and purchasers during the years 1935-36 and 1934-35 :—

Circle.	Year.	Major Forest Produce.				
		Timber.		Fuel.		Sandal-wood value.
		C.ft. in thousands.	Value.	C.ft. in thousands.	Value.	
			Rs.		Rs.	Rs.
Northern ..	1935-36 ..	2,698	15,65,461	8,169	22,527	..
	1934-35 ..	2,618	12,04,670	6,735	25,155	..
Central ..	1935-36 ..	1,355	4,77,751	6,736	77,638	..
	1934-35 ..	1,543	4,52,241	5,602	63,364	..
Southern ..	1935-36 ..	1,504	3,26,602	7,958	1,90,391	..
	1934-35 ..	1,609	3,81,103	6,719	1,76,332	..
Sind ..	1935-36 ..	295	87,981	16,652	4,25,529	..
	1934-35 ..	360	84,975	20,617	4,64,500	..
Total ..	1935-36 ..	5,852	24,57,795	39,515	7,16,085	..
	1934-35 ..	6,130	21,22,989	39,673	7,29,351	..

Circle.	Year.	Minor Forest Produce.			
		Bamboos value.	Grass and grazing value.	Other minor produce.	Total value.
		Rs.	Rs.	Rs.	Rs.
Northern ..	1935-36 ..	6,864	1,85,846	28,397	2,21,107
	1934-35 ..	6,937	1,87,964	27,268	2,22,169
Central ..	1935-36 ..	15,142	4,37,925	36,710	4,89,777
	1934-35 ..	17,424	4,16,081	34,547	4,68,052
Southern ..	1935-36 ..	66,749	83,944	30,242	1,80,935
	1934-35 ..	70,152	89,488	30,579	1,90,219
Sind ..	1935-36 ..	....	64,132	15,995	80,127
	1934-35 ..	....	56,900	14,769	71,669
Total ..	1935-36 ..	88,755	7,71,847	1,11,344	9,71,946
	1934-35 ..	94,513	7,50,433	1,07,163	9,52,109

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Northern Circle.—The number of second and third thinning coupes and *malki* teak coupes sold in the 3 Thana Divisions was larger than in the previous year and better prices were realized for timber coupes almost everywhere in the Circle. Contrary to the action taken in 1934-35, no large sales of fuel trees in woodland plots were held in the North Thana Division. These are the main causes contributing to the variations in the volume and value of timber and fuel. The decrease under grass and grazing is partly due to the sale of less *kuran* area than in the previous year in the North Thana Division and partly due to the cancellation and alterations of the terms in some 20 year grass contracts in the Panch Mahals Division. The increase under other minor produce is mainly due to recovery of past year's outstanding in the Panch Mahals and West Nasik Divisions.

Central Circle.—The fact that more coupes were sold in the East Khandesh, North Khandesh, Poona and Satara Divisions accounts for the increase in the total outturn and revenue under major produce. There was a poor demand for the Akrani bamboos. The increase under grass and grazing was due to (1) better grazing collections throughout, (2) keen competition at grass sales, particularly in the East Khandesh Division, and (3) increase of rent from Rs. 1-8-0 to Rs. 2 per acre for grass *kurans* leased to the Military Department in the Poona Range.

Southern Circle.—The decrease under timber was due to (1) less number of rejected wood compartments sold in the Northern Division, Kanara, (2) no coupes from the Yellapur-Mundgod high forest having been sold standing as was done last year and (3) the coupes worked by purchasers having yielded more fuel and less timber. The decrease under fuel was due to the superior quality of the coupes sold. The fall in the value of bamboos was due to poor demand for them in all Divisions except the Kanara Northern Division. The migration of cattle from the Belgaum and Dharwar-Bijapur Divisions due to the scarcity of fodder was responsible for the drop in the value of grass and grazing. Poor demand for *tali* palms in the Kanara Western Division and low price realized for the *tumri* leaves farm in the Dharwar Bijapur Division resulted in the decrease under "other minor produce".

Sind Circle.—The decrease in the quantity of timber and fuel was due to some coupes in the Sukkur and Shikarpur Divisions not having been sold for want of demand. The increase in the value of timber was due to better prices realized for coupes, deadwood and thinning contracts. The increase under grass and grazing was due to greater vigilance shown by the forest subordinates in grazing fee collection and that under other minor produce was due to realizations of previous year's outstandings on account of *babul* pod contract in the Shikarpur Division and to the supply of brushwood and seed to the Public Works Department.

(iii) Rights, Privileges and Free Grants.

The following is a comparative statement of the quantity and value of forest produce removed by right and privilege holders and free grantees during the years 1935-36 and 1934-35 :—

Circle.	Agency.	Major Forest Produce.				Minor Forest Produce.			
		Timber.		Fuel.		Bamboos value.	Grass and grazing value.	Other minor produce value.	Total value.
		C.ft. in thousands.	Value.	C.ft. in thousands.	Value.				
			Rs.		Rs.	Rs.	Rs.	Rs.	Rs.
Northern	C ..	..	..	6,602	1,55,353	54,995	10,77,470	1,08,598	12,41,063
	F ..	14	6,812	..	..	17	..	30	47
Central .	C ..	..	..	9,202	3,17,137	..	1,84,808	3,16,847	5,01,655
	F ..	18	8,188	3	84	532	1,895	4,914	7,341
Southern	C ..	189	38,925	11,108	1,26,208	5,594	3,38,840	72,278	4,16,712
	F ..	34	10,117	1	36	564	2,825	3,798	7,187
Sind ..	C ..	..	..	1,001	14,829	..	7,268	1,359	8,627
	F ..	23	2,706	2	93	..	21,855	39	21,894
Total ..	C ..	189	38,925	27,913	6,13,527	60,589	16,08,386	4,99,082	21,68,057
	F ..	89	27,823	6	213	1,113	26,575	8,781	36,469
Total of 1934-35.	C ..	302	72,900	18,256	3,46,103	71,522	7,98,552	51,232	9,21,306
	F ..	100	30,587	7	157	1,460	27,703	5,571	34,734

C=Concessionists. F=Free grantees.

There are no recognized rights other than those of way. Privileges allowed under settlements and local rules and other Government orders were enjoyed by the villagers as usual. It is very difficult to estimate accurately the quantity and value of forest produce removed by privilege holders. The figures for the year under report have been worked out on the basis believed to be the nearest approach to accuracy obtainable. The previous method of calculating the figures was faulty in that it was based on mere guess work. The change in the method accounts for the variations between the figures for the two years 1934-35 and 1935-36.

Free grants of timber and other produce were given to poor people in deserving cases for reconstruction of and repairs to their houses and huts and also for works of public utility such as temples, schools, chavdis etc. A large free grant of wood worth Rs. 500 was given to the High School at Mahad in the Kolaba Division. The villagers of Gokak, Parasgad, Sampgaon and Hukkeri talukas in the Belgaum Division were allowed to remove *anjan* leaves for fodder free of charge. A large forest area of the Khanapur and Nagargali Ranges in the same Division was thrown open for cutting and removal of grass free of charge by the villagers of Chikodi, Bail-Hongal, Khanapur, Gokak and Parasgad talukas. It is reported that only a few villagers of the Bail-Hongal and Khanapur talukas availed of this concession.

(c) Outturn and Sources of Forest Produce.

The outturn from all sources of forest produce during the two years 1935-36 and 1934-35 compares as follows :—

Circle.	Year.	Major Forest Produce.			Minor Forest Produce.		
		Timber C.ft. in thousands.	Fuel C.ft. in thousands.	Sandal-wood value.	Bamboos value.	Grass and grazing value.	Other minor produce value.
				Rs.	Rs.	Rs.	Rs.
Northern ..	1935-36 ..	2,851	15,329	..	61,881	12,63,316	1,37,025
	1934-35 ..	2,774	11,999	..	32,967	6,53,088	54,533
Central ..	1935-36 ..	1,390	16,395	1,047	15,674	6,24,628	3,59,473
	1934-35 ..	1,571	16,704	1,920	18,694	4,59,432	43,370
Southern ..	1935-36 ..	2,343	19,068	1,22,160	72,912	4,25,609	1,06,416
	1934-35 ..	2,676	9,722	1,00,596	1,15,995	3,79,232	52,603
Sind ..	1935-36 ..	322	17,792	..	..	93,255	17,958
	1934-35 ..	385	20,700	..	..	84,936	15,465
Total ..	1935-36 ..	6,906	68,584	1,23,207	1,50,467	24,06,808	6,20,872
	1934-35 ..	7,406	59,125	1,02,516	1,67,656	15,76,688	1,65,971
Difference ..		−500	+9,459	+20,691	−17,189	+8,30,120	+4,54,901

The total expenditure on management of State Forest was :—

Circle.	1935-36.	1934-35.
	Rs.	Rs.
Northern	1,34,989	1,41,092
Central	88,521	77,379
Southern	5,78,829	6,60,987
Sind	25,173	24,870
Total ..	8,27,512	9,04,328

The decrease was mainly due to the drop in the quantities of timber delivered by contractors at sale depôts and consequent decrease in payment of contract wages.

CHAPTER IV-A.

THE FOREST ENGINEERING BRANCH.

The work done in the forest engineering branch is shown below :—

Project.	Locality.	Nature of work.
1. SURVEYS.		
1. Manglankop-Amatgar-Kurli Road.	Kanara E. D.	.. Construction alignment.
2. Masti Nalla Causeway ..	Do. ..	.. Alignment of road deviation.
2. DESIGNS AND DRAWING WORK.		
Northern Circle.		
1. Bhanwad-Mankhed Road ..	West Nasik Division	.. Plans and estimates.
2. Kurkas Bridge over the Khapri River.	The Dangs	Do.
3. Mulchand Nalla Causeway ..	Do.	Do.
4. Garages and outhouses ..	West Nasik	Do.
5. Two wells	Do.	Do.
6. Guards quarters (katcha) ..	West Thana	.. Plan.

	Project.	Locality.	Nature of work.
7.	Divisional Forest Office	.. West Thana ..	.. Plan.
8.	Range Forest Office (repairs)	East Thana ..	.. Plan and estimates.
9.	Rest House at Sawa	.. North Thana	.. Sketch plan.
10.	Well at Chinchwe	.. East Nasik ..	.. Plan and estimates.
11.	Police Lines (Waghai)	.. The Dangs ..	.. Do.
12.	Dispensary (Do.)	.. Do. ..	.. Do.
13.	Kutcha huts for subordinates	Do. ..	.. Blue prints of plan.
14.	Do.	.. N. C. Direction office	.. Plan and estimates.
		Central Circle.	
15.	Inspection Bungalow, Dhebe-wadi.	Satara ..	.. Plan and estimates.
16.	Quarters for guards	.. West Khandesh Division	Do.
		Southern Circle.	
17.	Culvert on Patne-Karve Road.	Belgaum ..	.. Plan and estimates.
18.	Subordinates quarters at Masur.	Dharwar-Bijapur ..	Do.
19.	Haliyal Naka ..	.. Kanara N. D.	.. Estimate.
20.	Covering over bathroom of Potoli Naka.	Do ..	.. Do.
21.	Naka at Ramagurwadi	.. Belgaum ..	.. Plan and estimates.
22.	Guards quarters at Kirwatti.	Kanara E. D.	.. Estimate.
		Sind Circle.	
23.	Range quarters (Ghotki).	Sind ..	.. Estimate.

3. Construction.

The Forest Engineer exercised general supervision over the construction of the Kurkas bridge over the Khapri river in the Dangs, but was only able to visit the work on two occasions. This is a structure of 12 spans and the largest bridge hitherto built by the Forest Department. The roadway is carried on steel beams with timber top and is designed for 2-way traffic. The original plans prepared by Mr. Pipe in 1925 had to be revised in the light of the present Forest Engineer's recommendations after he had inspected the site. The project is being carried out by a Bombay firm of engineers and made good progress.

In the Southern Circle the construction of the Masti Nalla causeway was entirely in the hands of the Forest Engineer.

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Kurkas Bridge—Dangs.
View of initial stage of construction.

Repairs to the quarters of the temporary engineering staff, the stores shed and service reservoir at Dandeli were carried out at a total cost of Rs. 114-4-0.

4. Forest Exploitation.

(*a*) *Mechanical Extraction.*

The Fordson skidder was employed on timber extraction from compartment 27 of Felling Series XI Nagzari Valley from the 7th November 1935 to 15th March 1936. The outturn amounted to 960·21 tons against 885·19 last year. Extraction costs inclusive of all charges came to Rs. 10–9–0 per ton of 50 cubic feet with a mean length of haul of 1,002 feet and a maximum length of haul of 1,800 feet against Rs. 8–1–0 per ton with a mean and maximum length of haul of 1,135 feet and 2,250 feet respectively last year.

Despite the larger output extraction costs were higher than last year and were due to a revision of the method of assessing overhead charges and also to the fact that a larger number of sleeper pieces were collected.

This year as last year the animal winch was not worked.

(*b*) *Sawmilling.*

1. The following table shows the mills which were worked departmentally during the year, their total output together with the average cost of conversion excluding overhead charges and similar figures for the previous 4 years.

Name of mill.	Total output 1935–36.	Total output 1934–35.	Total output 1933–34.	Total output 1932–33.	Total output 1931–32.
	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.
Dandeli, N. D., Kanara ..	259,084	247,059	195,760	286,796	332,616
Mandurli, N. D., Kanara ..					
Kirwatti, E. D., Kanara ..	@3·34 as. per c. ft.	@3·35 as. per c. ft.	@4·36 as. per c. ft.	@4·01 as. per c. ft.	@4·16 as. per c. ft.

2. *Dead stock and stores.*—The dead stock of each mill was checked with the registers. Unserviceable dead stock was either repaired or written off under proper authority. The total value of dead stock and stores supplied to various sawmills is given below:—

	Rs.	a.	p.	
Dead stock ..	278	7	0	(Capital expenditure).
Consumable stores ..	11,357	8	2	(Revenue ,,).

3. *Progress of saumilling.*—The following table shows the outturn and average sawing charges incurred under the heads stores, labour and establishment, excluding overhead charges :—

Serial No.	Name of saw mill.	Output during the year.			Average sawing cost per c. ft.		
					Stores.		
1	2	1933–34. 3	1934–35. 4	1935–36. 5	1933–34. 6	1934–35. 7	1935–36 8
	Southern Circle.						
1	Dandeli saw mill	127,505	125,446	161,389	0·67	0·90	0·76
2	Foden Portable saw mill ..	15,467	Closed down.	Closed down.	1·69	Closed down.	Closed down.
3	Mandurli saw mill	16,792	62,524	58,990	1·14	0·68	0·72
4	Kirwatti saw mill	35,996	59,089	38,705	1·28	0·49	0·48

Serial No.	Name of saw mill.	Average sawing cost per c. ft.					
		Labour.			Establishment.		
1	2	1933–34. 9	1934–35. 10	1935–36. 11	1933–34. 12	1934–35. 13	1935–36 14
	Southern Circle.						
1	Dandeli saw mill ..	2·85	2·79	2·47	0·49	0·47	0·41
2	Foden Portable saw mill ..	2·38	Closed down.	Closed down.	0·92	Closed down.	Closed down.
3	Mandurli saw mill	2·26	1·42	1·56	0·86	0·35	0·25
4	Kirwatti saw mill	3·58	2·26	2·16	0·57	0·70	0·72

Serial No.	Name of saw mill.	Total excluding overhead charges per c.ft.			Remarks.
1	2	1933–34. 15	1934–35. 16	1935–36. 17	18
	Southern Circle.				
1	Dandeli saw mill	4·01	4·16	3·64	
2	Foden Portable saw mill ..	4·99	Closed down.	Closed down.	
3	Mandurli saw mill	4·26	2·45	2·53	
4	Kirwatti saw mill	5·43	3·45	3·36	(a)

(a) This mill was finally closed on 1st November 1935.

4. *Sawmill Trading Accounts.*—The outside audit branch of the Accountant General's office audited the trading accounts of the Dandeli and Kirwatti mills and the store account of the Forest Engineering branch for the year 1934-35.

The following 3 sawmills were worked departmentally in the Southern Circle :—

(1) The Dandeli mill ..
(2) The Mandurli mill .. } In the Kanara N. D.

(3) The Kirwatti mill In the Kanara E. D.

The sawmills at Dandeli and Mandurli worked throughout the year, while the Kirwatti mill worked for only 7 months and was finally closed down on 1st November 1935 for want of sufficient material to keep it fully employed.

The results of the working of the 3 sawmills are summarised in the following table :—

Items.	Dandeli mill.		Mandurli mill.		Kirwatti mill.	
	1935-36.	1934-35.	1935-36.	1934-35.	1935-36.	1934-35.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Revenue ..	3,58,271	2,31,854	1,30,829	83,022	1,01,490	81,828
Expenditure ..	1,60,970	1,41,449	40,648	43,864	41,028	55,908
Net profit ..	1,97,301	90,405	90,181	39,158	60,462	25,920
Capital at charge ..	87,564	1,10,380	33,530	40,959	14,601	38,436
Percentage of net profit on capital ..	225	82	269	95	414	67

All the 3 mills show an increase in the net profit over that in the preceding year. The increase was due to better prices realized for sawn material and to the supply of a large number of sleepers at enhanced rate to the M. & S. M. Railway. There was a considerable drop in expenditure of the Kirwatti mill since it worked only for 7 months.

Private saumills.—The private sawmill in the Kanara Eastern Division belonging to Mr. Sayad Nasrodin Hassansah turned out 1,115 M. G. sleepers and 13,000 cubic feet of sawn material as compared with 2,490 sleepers and 17,000 cubic feet sawn material in the previous year.

CHAPTER V.

FINANCIAL RESULTS.

(Forms Nos. 68, 69 and 70.)

The revenue and expenditure of the year compare with those of the last year and average of the previous quinquennium 1930-31 to 1934-35 as follows :—

Circle.	Year.	Revenue.	Expenditure.				Surplus or deficit.	Percentage of surplus to gross revenue.
			Conservancy, Maintenance and Regeneration.	Forest Capital Outlay.	Establishment.	Total.		
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Northern ..	1935-36	19,36,349	1,23,656	12,856	5,68,408	7,04,920	12,31,429	63·6
	1934-35	15,91,193	1,21,411	21,330	5,61,128	7,03,869	8,87,324	55·7
	Average	17,70,259	2,10,874	52,820	6,42,534	9,06,228	8,64,031	43·2
Central ..	1935-36	11,87,144	78,645	23,228	6,17,625	7,19,498	4,67,646	39·4
	1934-35	11,30,681	82,994	8,155	5,83,291	6,74,440	4,56,241	40·3
	Average	10,01,658	78,026	8,577	5,76,253	6,62,856	3,38,802	33·8
Southern ..	1935-36	20,82,899	5,64,122	14,887	5,57,722	11,36,731	9,46,168	45·4
	1934-35	21,05,086	6,41,955	19,124	5,43,215	12,04,294	9,00,792	42·8
	Average	22,48,167	9,08,538	25,516	5,81,208	15,15,262	7,32,905	32·6
Sind ..	1935-36	6,79,937	19,284	6,881	2,97,501	3,23,666	3,56,271	52·4
	1934-35	7,02,708	17,996	6,874	2,98,847	3,23,717	3,78,991	53·9
	Average	5,44,634	20,854	5,328	3,01,081	3,27,263	2,17,368	39·9
General Direction.	1935-36	....	96,307	33	75,372	1,71,712	— 1,71,712	..
	1934-35	96	97,685	13	63,444	1,61,142	— 1,61,046	..
	Average	30	1,10,311	43	73,648	1,84,002	— 1,83,972	..
Forest Engineering.	1935-36	3,637	13,170	— 42	39,689	52,817	— 49,180	..
	1934-35	3,986	13,331	— 767	35,412	47,976	— 43,990	..
	Average	1,713	23,477	307	47,979	71,763	— 70,050	..
Total Presidency.	1935-36	58,89,966	8,95,184	57,843	21,56,317	31,09,344	27,80,622	47·2
	1934-35	55,33,750	9,75,372	54,729	20,85,337	31,15,438	24,18,312	43·7
	Average	55,66,458	13,52,080	92,591	22,22,703	36,67,374	18,99,084	34·1
Difference between.	1935-36 and 1934-35	+3,56,216	— 80,188	+3,114	+70,980	— 6,094	+3,62,310	..

— FOREST. —

REVENUE, EXPENDITURE & SURPLUS.

BOMBAY PRESIDENCY.

REFERENCES.

Total Revenue Received ——

Total Expenditure ——

Surplus ---

52 A and 8B Expenditure

8C — do ——

DANES TRANSFERRED TO THE GOVT. OF INDIA 1923-24
DOTTED LINES INDICATE THE ORIGINAL FIGURES OF THE DANES.
SOLID LINES REVISED FIGURES OF THE DANES.

LAKHS OF RUPEES.

85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

1890-91 1891-92 1892-93 1893-94 1894-95 1895-96 1896-97 1897-98 1898-99 1899-00 1900-01 1901-02 1902-03 1903-04 1904-05 1905-06 1906-07 1907-08 1908-09 1909-10 1910-11 1911-12 1912-13 1913-14 1914-15 1915-16 1916-17 1917-18 1918-19 1919-20 1920-21 1921-22 1922-23 1923-24 1924-25 1925-26 1926-27 1927-28 1928-29 1929-30 1930-31 1931-32 1932-33 1933-34 1934-35 1935-36 1936-37 1937-38 1938-39 1939-40 1940-41 1941-42 1942-43 1943-44

The only considerable increase in the gross and net revenue and in the percentage of surplus to gross revenue occurs in the Northern Circle, while the figures for the Central Circle are remarkably similar to those of last year. Although there is a slight fall in the gross revenue of the Southern Circle, the surplus has risen as a result of the decrease in the total expenditure. In the Sind Circle, however, both the gross revenue and surplus have slightly decreased. The improvement in the Northern Circle is chiefly due to the sale of a large number of thinning and malki teak coupes in the Thana Divisions, and to better prices realized for timber coupes. In the Central Circle, good prices obtained for coupes in the North Khandesh, West Khandesh and Kolaba Divisions and for grass kurans in the East Khandesh, West Khandesh and Poona Divisions and the increased grazing fee collection are the main causes for the better results. In the Southern Circle, there is a decrease in the revenue of the Kanara Eastern and Belgaum Divisions, the chief reasons being less revenue realized from depot sales, coupes and bamboos and grazing fee collections and a reduced supply of sleepers to the M. & S. M. Railway. This decrease is, however, partly counterbalanced by increases in other Divisions, which are attributed to better prices realized for timber and coupes and to the greater quantity of sleepers supplied to the M. & S. M. Railway from the Kanara Northern Division. The decrease in the Sind Circle is mainly due to the Quetta disaster and consequent failure of the market there, which necessitated withholding certain coupes from sale in the Sukkur, Shikarpur and Larkana Divisions.

The Northern Circle shows a slight increase and the Southern Circle a considerable decrease in the expenditure under B-Conservancy, Maintenance and Regeneration. The increase in the Northern Circle is due to the payment of the 20 per cent. bonus to the land holders and of the 30 per cent. share to the District Local Board out of the sale proceeds of teak trees in occupied *warkas* lands in the Thana District. The decrease in the Southern Circle is due to the failure on the part of some of the contractors in the Northern and Eastern Divisions of Kanara to work up to the stipulated deliveries of timber, and also to the restricted departmental fellings and consequent drop in payment of extraction charges.

On the whole there has been an increase in the expenditure under 52A Capital Outlay and C-Establishment. The increase under the former head is chiefly due to the construction of more buildings and to the continuance of work on the Dara-Dhadgaon road in the Central Circle and that under the latter head is due to the restoration of the 5 per cent. emergency cut in pay and to annual increments of pay granted to officers and subordinates.

The analysis of the receipts and expenditure shows that, of the receipts, 77 per cent. came from major produce, 16 per cent. from minor produce and 7 per cent. from miscellaneous sources; while, of the expenditure, 31 per cent. was incurred on extension, constitution, improvement and

exploitation of forests and 69 per cent. on administrative, executive and protective charges.

The expenditure incurred from the provision under "52-A Capital Outlay on Forests" subsequently charged to revenue is as shown below :—

Heads.	General Direction.	Forest Engineering.	Northern Circle.	Central Circle.	Southern Circle.	Sind Circle	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I Surveys ..	..	..	..	..	..	..	..
II Organization, Improvement and Extension ..	..	..	152	291	171	..	614
III Communications and Buildings ..	..	..	11,569	22,031	14,290	6,220	54,110
IV Railways and Tramways ..	..	..	..	..	..	..	..
V Livestock stores, tools and plant ..	33	..	1,135	1,060	426	661	3,315
Deduct—Receipts and recoveries on Capital Account..	..	— 42	..	— 154	..	..	— 196
Total ..	33	— 42	12,856	23,228	14,887	6,881	57,843

The outstandings on account of revenue at the commencement and close of the year were :—

Circle.	On 1st April 1935.	On 31st March 1936.
	Rs.	Rs.
Northern	42,568	1,01,273
Central	11,636	12,733
Southern	1,54,500	1,83,014
Sind	1,85,602	1,44,764
Total ..	3,94,306	4,41,784

A sum of Rs. 3,609 was written off in the Northern and Southern Circles under proper authority.

The outstandings on account of contractors and disbursers were as follows :—

Circle.	On 1st April 1935.	On 31st March 1936.
	Rs.	Rs.
Northern	115	84
Central	253	46
Southern	7,292	4,138
Sind	663	275
Total ..	8,323	4,543

A sum of Rs. 2,948 was written off as per Government Resolution, Revenue Department, No. 4532/33, dated 11th February 1936.

CHAPTER VI.

RESEARCH AND EXPERIMENT.

In the absence of a separate organization to deal with silviculture and research the Chief Conservator's office continued to control research work of a general character. There were 10 subjects under investigation during the year. A few problems of purely local interest were taken up for investigation by the Divisional Forest Officers concerned under the general control of their Conservators.

The work done and observations made are briefly described below :—

NATURAL REGENERATION.

Sandal (Santalum album).

Subject No. 28.—Effect of early burning on sandal wood growth and regeneration. (Division—Belgaum.)

The 2nd remeasurements of the 100 sandal trees in each of the plots 28-A and 28-B, were taken in December 1935. The trees were reclassified into 1″ girth and 3′ height classes with the following results :—

	Plot A. (Protected.)	Plot B. (Early burnt.)
Average girth at—		
Original measurement	4·97″	5·59″
1st remeasurement	5·60″	5·65″
2nd remeasurement	5·63″	5·65″
Average height at—		
Original measurement	12·12′	12·27′
1st remeasurement	12·66′	12·84′
2nd remeasurement	12·72′	12·87′

There is no significant difference in the average girth and height development in both the plots and this confirms the result obtained in the original experiment.

The Silviculturist, Dehra Dun, desired that these trees should be kept under observation for 3 years. One more remeasurement therefore remains to be taken for the completion of this experiment.

Artificial Regeneration.

Hirda (*Terminalia chebula*).

Subject No. 37.—Sowing and planting of *hirda* on *laterite soil* in the shade of existing shrubs or small trees. (Divisions—Poona and Satara.)

In the Vadgaon Range of the Poona Division 2 plots have been formed. In one plot *hirda* seed was sown in 100 pits, 3 seeds in each pit, and in the other 100 stumps were planted, in the shade of existing shrubs or small trees. 111 seedlings resulted from the sowing, and 96 stumps gave shoots. Weedings were carried out in August and December 1935, earthing up was done in December 1935 and watering from February 1936. The survivals in February 1936 were 60 seedlings and 66 transplants.

This experiment could not be replicated in the Satara Division for want of seedlings for stump planting. The seedlings have been raised in a nursery but the Divisional Forest Officer is of opinion that under the conditions prevailing at Mahableshwar stumps from 2 year old seedlings are necessary for obtaining satisfactory results.

Thinnings and Cleanings.

Teak.

Subject No. 4.—Effect of thinning on teak coppice at different ages (East Thana Division).

The 2nd remeasurements in plots 4·B2, 4, 6 and 8 were taken and recorded during the year.

The object of this experiment is to find out not only the effect of thinnings but also the relative value of retaining 1, 2 and 3 shoots on a stool.

Subject No. 5.—Effect of different degrees of thinnings in teak plantations of different ages. (Divisions—West Nasik and West Thana.)

The sample plots in the West Thana and West Nasik Divisions have been abandoned.

Subject No. 34.—Effect of different degrees of thinnings in teak plantations (Divisions—Kanara Northern Division, Eastern Division, and Western Division).

For the purpose of this investigation 4 plots, ranging from 11 to 14 years of age each divided into 4 sub-plots and thinned to A, B and C degrees, are under observation in the three Kanara Divisions. The first remeasurement in these plots was taken in 1935-36, *i.e.*, 5 years after the date of the original measurement. The following are the mean diameters arrived at :—

Sub-plot No.	Treatment.	Mean diameter.		
		At original measurement.	At 1st re-measurement.	Difference.
		Inches.	Inches.	Inches.
	Plot No. 34-*D*—11 *years.*			
I	Control	3·6	4·9	1·3
II	"A" degree	3·5	5·1	1·6
III	"B" "	3·1	4·7	1·6
IV	"C" "	3·5	5·9	2·4
	Plot No. 34-*B*—12 *years.*			
I	Control	3·2	4·0	0·8
II	"A" degree	3·9	5·5	1·6
III	"B" "	3·5	5·3	1·8
IV	"C" "	3·7	5·6	1·9
	Plot No. 34-*C*—13 *years.*			
I	Control	3·3	3·9	0·6
II	"A" degree	3·6	4·3	0·7
III	"B" "	3·8	4·8	1·0
IV	"C" "	3·8	4·7	0·9
	Plot No. 34-*A*—14 *years.*			
I	Control	3·8	3·9	0·1
II	"A" degree	3·7	4·2	0·5
III	"B" "	4·1	4·7	0·6
IV	"C" "	4·0	4·4	0·4

The above figures show that the rate of diameter increment is highest in the 11 year old plot, the 12 year plot showing slightly less while in 13 and 14 year old plots there is a sudden drop.

As regards the effect of different intensity of thinnings on the diameter increments, the figures are rather conflicting. In plots D and B the progress is in the order expected, *i.e.*, IV, III, II but in plots C and A the order is III, IV, II and III, II, IV respectively. The sub-plot I (control) in all the plots have shown the lowest increment. The general mean diameters however indicate the correct order, *i.e.*, IV, III, II, I as given below :—

	Sub-plots.			
	I Inches.	II Inches.	III Inches.	IV Inches.
Plot D	1·3	1·6	1·6	2·4
Plot B	0·8	1·6	1·8	1·9
Plot C	0·6	0·7	1·0	0·9
Plot A	0·1	0·5	0·6	0·4
Total ..	2·8	4·4	5·0	5·6
General mean ..	0·7	1·1	1·25	1·4

The mean height increments of plots D, B, C and A are 7·75, 12·0, 2·5 and 2·5 feet respectively.

The Divisional Forest Officer, Working Plans, S. C., has made the following remarks :—

" (1) Heavy thinnings have not resulted in the development of epicormic branches or strong side branches likely to reduce the value of the bole.

(2) Only in one instance, namely, Gersoppa 34-C did heavy thinnings result in some wind-falls. Here 8 trees in the sub-plot IV and some trees of the surround as well, were broken by wind in the year following the thinning operations.

(3) The canopy in all the plots was found to have closed up except in the case of original gaps which had existed from the date of formation.

(4) In sub-plots I, II and in III there is very little undergrowth in the well stocked portions. Thinning in sub-plot IV has resulted in the maintenance of undergrowth throughout the plot.

As regards suggestions for the future it is necessary to take careful note of the period required for the canopy to close up after thinning according to each grade and to prescribe the interval of thinnings for each degree of intensity.

As the original gaps are likely to take at least another five years to close up, the next interval of all thinnings may be fixed at about 5 years and when carrying out the next thinnings the varying degrees should be so fixed as to provide a different interval for each grade."

Subject No. 8.—Increment of *babul* under different degrees of thinnings (Division Hyderabad Sind).

No field work was done in connection with the old set of 10 plots worked according to the Dehra Dun Method (A, B and C grade) as the thinnings in these are not due till November 1936.

As regards the additional set of 9 one acre (and not half acre as stated through oversight in last year's report) plots laid out in March 1934 in compartments 9 and 10 Manjhand forests, and in which a preliminary 10′-20′ (sapling) thinning was carried out during May 1934, six were thinned a second time during January last as under—

One set of 3 plots (Nos. 13, 16 and 19) to 20′-40′ spacing (mean 30 feet) called the "Heavy Thinning" and the other set of 3 plots (Nos. 12, 15 and 18) to 15′-30′ spacing (mean 22½ feet) named the "Moderate Thinning". It was not considered advisable to open up these areas suddenly, so a period of 1½ years was allowed to elapse between the first and second thinning.

The remaining set of 3 plots (Nos. 11, 14 and 17) already thinned at 10′-20′ spacing called the "Light Thinning" had not to be treated this year.

The measurements as laid down in the statistical code have been recorded for the six plots thinned during the current year and the complete record together with the previous one is being forwarded to Dehra Dun for computation.

Miscellaneous.

Sandal.

Subject No. 7.—Annual girth increment of sandal. (Divisions—Belgaum and Dharwar-Bijapur.)

The triennial measurement of girth in plots 7A I to IV was carried out in May 1934 and in plots 7B I and II in November 1935.

The average girth increment per tree per annum as shown by the measurement is as follows :—

Plot	7A I	..	..	·15″
,,	,, II	..	..	·14″
,,	,, III	..	..	·21″
,,	,, IV	..	..	·14″
,,	7B I	..	..	·24″
,,	,, II	..	..	·27″
		Total	..	1·15″

Mean annual increment—·19 inches.

Note.—Only those trees registering an increase in girth have been taken into account in arriving at the increment figures.

Subject No. 32.—Correlation existing between the outer girth increment and heartwood increment of sandal. (Division—Dharwar-Bijapur).

Borings in this plot which remained incomplete last year were completed during the year and the data recorded show that in 50 per cent. of the trees there is a decline in heartwood development. The next measurement is due in 1938-39.

Bahan (Populus euphratica).

Subject No. 10.—Economic age for *bahan* vitality of coppice stools. (Division—Shikarpur-Sind.)

Plot 10D was felled in the 2nd rotation and necessary data recorded. The yield in the form of poles has been very low in all classes, the outturn being 205 poles as against 660 in the first rotation.

The Divisional Forest Officer remarks that there appears to be a general lowering of vitality of the stems in this plot for which no particular reason can be assigned. He also states that the set of the river is against the forest and that a part of sample plot No. 10B which was worked in 1933-34 has been washed away.

Plot No. 10A is due for felling in its 3rd rotation and 10B in its 2nd rotation in the year 1938-39.

Miscellaneous species.

Subject No. 16.—Effect of improvement felling on diameter growth (Dangs, Surat) (Teak and important junglewoods).

There is nothing to record this year. Next measurements are due in December 1936.

Preservation Plots and Protected Trees.

In accordance with Resolution No. 22 passed by the Silvicultural Conference, 1929 and 1934, the following areas which will be preserved perpetually in their natural state have been reserved in this Presidency as " Preservation Plots " :—

Division.	Type of forest.	Area in acres.
Panch Mahals	Finest teak forest in the Division ..	20
Dangs, Surat	Typical unworked forest with very fine growth of all species.	2 plots of 20 acres each.
North Thana	Typical mixed deciduous forest ..	31
Poona	Evergreen, chiefly mango	8
	Rare virgin high forest of evergreen formation	608 5
	A temple grove of mixed deciduous forest of superior quality	150
	One of the original botanical gardens formed prior to 1840 by Mr. Gibson in which he raised mahogany and other exotics ..	18
Kanara, E. D.	Evergreen unorganised forest	54
	Teak bearing high forest	20
	Teak bearing pole forest	20
	Non-teak bearing deciduous forest (unorganised)	30

The following trees will be preserved as "Protected Trees" for their lifetime :—

(1) A remarkable "honey" tree (*Tetrameles nudiflora*) whose height is 120 feet and girth including buttresses 52 feet, in Kanara E. D. Its age is about 100 years, and its branches are festooned with honey combs.

(2) A fine teak tree, 12′–7″ girth at 4′–6″ from the ground level, in Kanara W. D.

Phenological observations.

Under instructions from the Silviculturist, Forest Research Institute, Dehra Dun, phenological observations on teak have been undertaken in North Thana, Panch Mahals North, East and West Khandesh and Kanara Northern Divisions.

Tung tree (Aleurites fordii).

Attempts were made to raise tung trees in the teak Pole and High Forest coupes in the Sambrani and Yellapur Ranges of Kanara, Northern Division and Eastern Division, respectively. 124 seeds sown on burnt patches gave only 13 seedlings out of which 11 are reported to be surviving.

Similar attempts in the Northern Circle were unsuccessful.

Tembhurni leaves.

The Marketing Officer of the Agricultural Department reported that large quantities of *tembhurni* leaves are annually imported from the Central Provinces for the manufacture of "*bidis*", because the leaves produced in this Presidency are considered coarse by *bidi* manufacturers. Enquiry with the Central Provinces forest authorities elicited the fact that pollarding of *tembhurni* trees is practised to produce a large crop of pliant large sized leaves. Experiments were carried out in the three Forest Circles of this Presidency, with a view to improving the local supply of leaves and it was discovered that pollarded trees do yield larger and finer textured leaves, but before pollarding can be introduced on an extensive scale, further experiments are necessary to find out the most suitable time for such operations and the frequency and intensity with which they can be carried out without impairing the vitality and growth of the trees.

Forest Flora.

The Conservator of Forests, Central Circle, Mr. R. W. Inder, continued his botanical researches and now has sufficient data to undertake the revision of the Forest Flora of Bombay which is greatly needed to bring it up to date in classification and distribution of species.

Experiments carried out by the Divisional Forest Officer, East Thana Division.

The experiment undertaken last year to discover whether *Bauhinia racemosa* is sufficiently fire resistant to serve as a suitable species for raising a crop of trees in the old deserted village sites and cultivated areas in the Tansa Catchment area was continued during the year. About half an acre was ploughed and sown in furrows 6 feet apart. Only 10 per cent. germinated. The grass which grew profusely in the areas had to be removed at considerable expense. The experiment does not appear to be a practical proposition since the cost of weeding the plants every year till they overtop the annual heavy crop of grass would be prohibitive. The Divisional Forest Officer, therefore, proposes to try the rab method of regeneration. If this proves unsuccessful afforesting such areas will have to be attempted by means of the agri-cum-forestry system.

Poona Division.

Three experimental plots were laid out in the Nigdale forest near Bhimashankar with the object of discovering the most suitable method of treatment which will promote regeneration in ever-green forests and also to observe the effect of opening the canopy in a mature area.

The experiment of rotational grazing in the Devighat Wadki kuran under the control of the Agricultural Department which was started in 1931–32 was to have terminated this year but as conclusive results have not yet been obtained the period has been extended to end of March 1937.

Kolaba Division.

The Eucalyptus plants raised in the nursery at Matheran, referred to last year, died when transplanted. This is attributed to the peculiar weather conditions prevailing at Matheran during the monsoon months.

Satara Division.

Four experimental plots were established at Mahableshwar in 1932–33 with a view to ascertaining the comparative coppicing power of different species when cut at (*a*) ground level, (*b*) 3″, (*c*) 6″ and (*d*) 9″ above ground level. The coppice growth that has sprung up showed no significant difference between the different treatments and hence no further investigation seems necessary in this direction.

Attempts were made to raise Cypress (*Cupressus torulosa*) in Mahableshwar from seed. Germination was good but only about 10 to 15 seedlings were carried over to a fairly safe stage. It is hoped that they will survive the 1936 monsoons and then become established.

Efforts are being made to raise " Oak " (*Quercus incana*) from seed collected from the old oak tree in the Government House compound at Mahableshwar.

A small area of ever-green forest at Helwak was felled and burnt and on the site teak seed was sown with good results. The seedlings which are strong and healthy show exceptional growth for the Satara Division.

Kanara Eastern Division.

In the Katur Range hedging and interplanting teak with *boga* (*Tephrosia candida*) was tried as a protection against fire and as a soil cover. After examining the results, the Divisional Forest Officer has come to the conclusion that the species has not fulfilled his hopes.

Belgaum Division.

The sandalwood regeneration work mentioned in the last year's report was continued during the year with most encouraging results. The whole area of 30 acres was again gone over and all blanks planted up and casualties replaced by fresh dibbles. The lantana which was cut back and burnt in 1934 threw out new sprouts which provided excellent protection for the new plants. Altogether there are some 6,000 one-year old plants and 3,000 two-year old plants in the area. The stocking is said to be excellent, testifying to the successful result of the experiment.

SIND.

Larkana Division.

Experimental sowings of *tali* (*Dalbergia sissoo*) and mulberry seeds obtained from the Punjab were carried out in the Bahaman forest. Germination was on the whole excellent, being over 80 per cent. The seedlings are healthy and vigorous, though the rate of growth does not appear to be as good as that in the older plantations presumably on account of the soil being sandy.

Seeds of *Acacia catechu* and *Bombax malabaricum* were sown in two plots each quarter of an acre in extent. Germination was profuse. Excess seedlings were used for transplanting in order to ascertain whether these species could bear transplanting in Sind. The transplants have survived and are considered to be established.

Bamboo seed, received from Kanara, was sown in specially prepared nursery beds. Germination was very satisfactory but unfortunately the seedlings were uprooted by pigs ; 8 seedlings which escaped have been fenced.

Experimental sowings of *tali*, mulberry, *khair* and *Bombax* were also done in the Kasimshah forests but the results were very poor due to several adverse factors.

The Divisional Forest Officer remarks that *khair* germinated well even in slightly *kalarish* soil and that it can stand ordinary Sind cold and of all the Presidency species appears to be most suited for introduction in Sind. *Bombax* can grow only in soil free from *kalar* and is susceptible to even ordinary cold.

Shikarpur Division.

A few plants of exotic species such as *Morus alba*, *Gmelina arborea*, *Acacia catechu*, *Bombax malabaricum*, *Tectona grandis* and *Ougeinia dalbergioides*, raised in the Rahuja garden in the previous years are said to be doing well. Mild frost had no effect on these species. Sandal seed sown this year failed to germinate.

Hyderabad Division.

The seedlings of *Hardwickia binata* did not flourish hence the experiment was discontinued. The seedlings of *Acacia catechu* showed promise in a small scale experiment. As regards African *Acacia* varieties the seedlings made very little progress owing to their being frost tender.

Karachi Division.

15 plants of *Acacia nilotica* sown in compartment 2, Khatro forest, on 6th August 1930 are surviving and doing well. As the analysis carried out by the Imperial Institute shows that the pods of the species contain 50 per cent. more tannin than those of the local *babul*, the Range Forest Officer has collected seed of this species for sowing in the forests of this and of the Hyderabad Division. The result of these sowings will be reported in due course.

Lac.

The experiment in the propagation of lac on *palas* (*Butea frondosa*) trees at Mandihal in the Dharwar Range of the Dharwar-Bijapur Division was continued during the year. About 18 lbs. of seed lac was collected.

The reason for the gradual disappearance of natural lac in the Hyderabad Division, Sind, was investigated. The Director, Indian Lac Research Institute, is of the opinion that heavy mortality and poor crops result from allowing natural infection to take place continuously on unpruned dry and hard twigs. The usual common parasites are present among which *Emblumma amabilis* is reported to be prominent. It is probable that in the days when lac was flourishing in these forests there were not the same restrictions as there are now as regards lopping and pollarding. If lac is to count again as a source of revenue definite areas, liable to annual inundation, should be set apart for the purpose of growing lac and no fellings, other than occasional thinnings, should be permitted. Pollarding of course will have to be done on a pre-arranged rotation and steps were taken at the end of the year to start experimental pollarding in suitable areas.

Eradication of prickly pear.

The introduction of the Cochineal insect in certain forests of the Poona, Dhond and Satara Ranges has been extraordinarily successful. Infection spread rapidly from one forest to another and no further importation

of these insects appears to be necessary. It is anticipated that all the prickly pear will be completely destroyed within the next few years. It has been found that nowhere has the infection spread to other forest growth. It cannot yet be stated whether other growth will be affected after the prickly pear has been completely eradicated. It does not appear likely.

CHAPTER VII.

ADMINISTRATION.

The post of Chief Conservator was held by Mr. C. L. Gilbert from 1st April to 19th June 1935 and again from 7th December 1935 to 31st March 1936, and by Mr. D. B. Sothers from 20th June to 6th December 1935.

The territorial Circles were held by the following officers :—

Northern Circle	..	Mr. R. P. Dalley from 1st April 1935 to 19th July 1935.
		Mr. J. Walker from 20th July 1935 to 29th July 1935.
		Mr. H. P. W. Davis from 30th July 1935 to 7th October 1935.
		Mr. H. W. Starte from 8th October 1935 to 31st March 1936.
Central Circle	..	Mr. D. B. Sothers from 1st April 1935 to 19th June 1935.
		Mr. H. P. W. Davis from 20th June 1935 to 27th July 1935.
		Mr. R. W. Inder from 28th July 1935 to 31st March 1936.
Southern Circle	..	Khan Bahadur S. N. J. Ratnagar from 1st April 1935 to 18th December 1935.
		Mr. A. C. Hiley from 19th December 1935 to 31st March 1936.
Sind Circle	..	Mr. J. B. T. Brooks from 1st April 1935 to 31st October 1935.
		Mr. J. Petty from 1st November 1935 to 11th December 1935.
		Mr. D. B. Sothers from 12th December 1935 to 31st March 1936.

Divisional charges were held by officers named below :—

Division.	Name of officer.	From	To
Panch Mahals ..	Mr. S. P. Pandya ..	1st April 1935 ..	30th April 1935.
	Mr. J. Dutt ..	1st May 1935 ..	31st May 1935.
	Mr. S. P. Pandya ..	1st June 1935 ..	31st March 1936.
North Thana ..	Mr. R. J. Smith ..	1st April 1935 ..	12th April 1935.
	Mr. G. S. Singh ..	13th April 1935 ..	23rd November 1935.
	Mr. D. G. Sane ..	24th November 1935 .	23rd December 1935.
	Mr. G. S. Singh ..	24th December 1935 .	31st March 1936.
East Thana ..	Mr. E. K. Kotwal ..	1st April 1935 ..	10th October 1935.
	Mr. R. J. Smith ..	11th October 1935 ..	31st March 1936.
West Thana ..	Mr. G. S. Singh ..	1st April 1935 ..	11th April 1935.
	Mr. T. K. Mirchandani.	12th April 1935 ..	31st March 1936.
East Nasik ..	Mr. V. A. N. Sausman.	1st April 1935 ..	31st March 1936.
West Nasik ..	Mr. H. P. W. Davis ..	1st April 1935 ..	6th June 1935.
	Mr. J. Walker ..	7th June 1935 ..	6th November 1935.
	Mr. D. G. Sane ..	7th November 1935 ..	24th November 1935.
	Mr. J. Walker ..	25th November 1935 .	31st March 1936
Working Plans, Northern Circle.	Mr. R. P. Dalley ..	1st April 1935 ..	19th July 1935.
	Mr. J. Walker ..	20th July 1935 ..	29th July 1935.
	Mr. H. P. W. Davis	30th July 1935 ..	7th October 1935.
	Mr. H. W. Starte ..	8th October 1935 ..	31st March 1936.
Gurcharan Officer, Thana.	Mr. F. X. Saldanha ..	1st April 1935 ..	31st March 1936.
East Khandesh ..	Mr. H. J. C. Millett ..	1st April 1935 ..	4th February 1936.
	Mr. O. B. Parikh ..	5th February 1936 ..	31st March 1936.
North Khandesh .	Mr. V. N. Hasabnis ..	1st April 1935 ..	31st March 1936.
West Khandesh ..	Mr. F. A. B. Coelho ..	1st April 1935 ..	26th October 1935.
	Mr. R. P. Dalley ..	27th October 1935 ..	31st March 1936.
Poona ..	Mr. R. A. Shirali ..	1st April 1935 ..	3rd June 1935.
	Mr. J. A. Singh	4th June 1935 ..	23rd October 1935.
	Mr. E. S. B. Tavener .	24th October 1935 ..	31st March 1936.
Kolaba ..	Mr. Y. R. Divekar ..	1st April 1935 ..	31st March 1936.
Satara ..	Mr. W. C. de C. Walsh.	1st April 1935 ..	31st March 1936.
Working Plans, Central Circle.	Mr. J. A. Singh ..	1st April 1935 ..	8th June 1935.
	Mr. H. P. W. Davis ..	9th June 1935 ..	19th June 1935.
	Mr. J. A. Singh ..	20th June 1935 ..	23rd December 1935.
	Mr. E. S. B. Tavener .	24th December 1935 .	11th February 1936.
	Mr. J. A. Singh ..	12th February 1936 ..	31st March 1936.
Kanara, Northern Division.	Mr. E. A. Garland ..	1st April 1935 ..	2nd August 1935.
	Mr. M. S. Kalbag ..	3rd August 1935 ..	19th December 1935.
	Khan Bahadur S. N. J. Ratnagar.	20th December 1935.	31st March 1936.

Division.	Name of officer.	From	To
Kanara Eastern Division.	Mr. J. Walker ..	1st April 1935 ..	3rd June 1935.
	Mr. R. F. Sandeman .	4th June 1935 ..	31st March 1936.
Kanara Western Division.	Mr. A. D. Mufti ..	1st April 1935 ..	5th June 1935.
	Mr. E. T. C. Vas ..	6th June 1935 ..	31st March 1936.
Belgaum ..	Mr. H. C. Holmes ..	1st April 1935 ..	31st March 1936.
Dharwar-Bijapur .	Mr. R. F. Sandeman	1st April 1935 ..	3rd June 1935.
	Mr. R. A. Shirali ..	4th June 1935 ..	31st March 1936.
Working Plans, Southern Circle.	Khan Bahadur S. N. J. Ratnagar.	1st April 1935 ..	6th June 1935.
	Mr. A. D. Mufti ..	7th June 1935 ..	30th October 1935.
	Mr. F. A. B. Coelho .	31st October 1935 ..	31st March 1936.
Sukkur ..	Mr. N. C. Ramchandani.	1st April 1935 ..	31st March 1936.
Shikarpur ..	Mr. M. L. Khanna ..	1st April 1935 ..	31st March 1936.
Larkana ..	Mr. Abdul Rahim ..	1st April 1935 ..	31st March 1936.
Hyderabad ..	Mr. G. J. Ramchandani.	1st April 1935 ..	5th September 1935.
	Mr. S N. Kesarcodi .	6th September 1935 .	31st March 1936.
Karachi ..	Mr. J Petty ..	1st April 1935 ..	31st October 1935.
	Mr. G J. Ramchandani.	1st November 1935 ..	11th December 1935.
	Mr. J. Petty ..	12th December 1935.	31st March 1936.
Working Plans, Sind.	Mr. C. G. Abichandani.	1st April 1935 ..	31st March 1936.

It will be seen that there were frequent changes among the Divisional Forest Officers mainly owing to a larger number of officers going on and returning from leave than usual.

At the close of the year the number of officers attached to Divisions as Assistants or Sub-Divisional Forest Officers was 11, of whom 2 belonged to Class I and the remaining 9 to Class II.

Messrs. P. E. Aitchison, C.I.E., I.F.S., Chief Conservator of Forests, and V. S. Kanetkar, Assistant Conservator of Forests, retired from service during the year.

Mr. L. V. Gonsalves was reverted from the Bombay Forest Service Class II to the Ranger's grade.

Mr. D. R. Bharucha, Rao Saheb C. K. Amin and Mr. S. G. Pithwa, Rangers, were promoted to the Bombay Forest Service Class II.

Subordinate and Clerical Establishments.

Two candidates, after successfully completing their training at the Madras Forest College, joined their appointments as Rangers during the year. Eight new recruits, 5 for the Presidency proper and 3 for Sind

were selected for training in the Rangers' Course 1936–38. They went through the practical training satisfactorily and joined the College after the close of the year.

The Conservator of Forests, Southern Circle, reports that 7 vacancies of clerks, 2 permanent and 5 temporary, were offered to candidates of backward classes approved by the Backward Class Officer. With the exception of one, the candidates either resigned or left service without notice, causing inconvenience in offices to which they were posted. Unless suitable men are forthcoming it will be very difficult to secure the prescribed percentage of recruitment of candidates from backward classes in the clerical service.

The Foresters Class was as usual conducted at Mandvi in the Northern Circle by a Ranger for a continuous period of 6 months. In all 24 students joined the class; 12 from the Northern Circle including 1 from the Dangs Division, 10 from the Central Circle and 2 from Indian States. Of these, 18 completed the course and passed the final examination while 6 were sent back being found unfit to follow the course. In the Southern Circle the special course for training young Foresters and Guards under selected Rangers was continued. Out of 12 subordinates deputed for training, 11 passed successfully.

The work of Rangers and other subordinate protective and office establishments is reported to be satisfactory.

The title of Rao Saheb was conferred after the close of the year on Mr. M. S. Wagle, head clerk to the Conservator of Forests, Northern Circle. This is the second instance in which the services of a head clerk have been recognized by Government, the first instance being that of Rao Saheb D. V. Koppikar, head clerk to the Chief Conservator of Forests, who was granted this title in the year 1934–35.

Casualties and Punishments.

Particulars.	Northern Circle.	Central Circle.	Southern Circle.	Sind Circle.	Total.	
					1935–36.	1934–35.
1. Retirements ..	20	18	17	10	65	66
2. Deaths ..	6	11	16	6	39	32
3. Resignations .	5	6	1	8	20	16
4. Degradations ..	28	32	..	8	68	42
5. Convictions ..	3	..	..	1	4	5
6. Dismissals, Removals, etc.	12	16	3	13	44	31
Total ..	74	83	37	46	240	192

The forest staff suffered from malaria in the North Thana, East Thana, West Nasik, Kanara and Khandesh Divisions. In Kanara particularly, subordinates suffered much and there were 16 premature deaths as against

9 in the previous year. The health of the staff at other places was fairly good.

The two pending cases, one against two Forest Guards in the East Thana Division and the other against one Forester in the Belgaum Division, who were charged with having received illegal gratification, were decided during the year and all the accused were convicted.

Inspection and Tours.

The Chief Conservator toured in all the Circles of the Presidency. The Divisional and other offices were inspected by the Conservators as usual and no serious irregularities were noticed.

Civil Suits.

Northern Circle.—Khan Bahadur Sadwa has filed his second appeal in the High Court against the decision of the suits brought by him against Government contesting the right of Government to terminate the lease of forest lands given out to him for temporary cultivation in the Panch Mahals Division. The defence of this appeal has been sanctioned by Government. Mr. N. P. Ponda has filed a suit for a declaration that the orders of the Conservator of Forests, Northern Circle, and the Collector of Thana demanding and recovering a sum of Rs. 2,160 as the price of Government trees cut and removed from certain Service Inam lands in the villages of Savrolli and Osarvira are illegal. Mr. G. N. Mohite has also filed a similar suit for a declaration that he is the full owner of the aftergrowth of teak trees in certain survey numbers in the village of Talasari and for a refund of Rs. 777 recovered from him as price of the trees cut by him. The defence of both the suits has been sanctioned by Government after close of the year.

Southern Circle.—The suit filed against Government by Mr. N. K. Kulkarni last year was dismissed with all costs. Two fresh suits were brought against the contractor of the firewood depots at Sadashivgad and Majali in the Western Division, Kanara, and an interim order was passed by the Court attaching the fuel meant for sale in the two depots and prohibiting the depot contractor from disposing of the fuel. In order to safeguard the interests of this Department and to avoid inconvenience to the public of the two villages, the prohibitory order was opposed by this Department and later on cancelled by the Court. Out of the 3 appeals pending from last year, one was decided in favour of Government, another was decided against Government and the third is still pending.

Land Revenue Administration.

The Divisional Forest Officer, West Nasik, continued to function as Assistant Collector and Excise Superintendent of Peint Taluka.

The Excise and Revenue administration of the Akrani Mahal was managed by the Forest Department together with the Revenue

administration of Pal and a few other villages in the East Khandesh Division. The Raisingpur Estate was also managed by the Forest Department under the Court of Wards.

The four forest mahals in Kanara viz. Dandeli, Kulgi, Virnoli and Kirwatti were as usual administered by the Forest Department.

Kumries.

Many of the kumri villages in the Belgaum Division were inspected by the Divisional Forest Officer. All the grantees are reported to be satisfied with the areas allotted to them. The Divisional Forest Officer remarks that since the flat lands settled for the so called " permanent cultivation" are not in most cases suitable for anything but " kumri" there is no point in disforesting such lands.

Village Panchayats.

All the existing panchayats—4 in the Kanara Northern Division and 13 in the Kanara Western Division—worked satisfactorily on the whole. Eight of the panchayats undertook the clearance of thorny bushes and other noxious growth ; two panchayats engaged watchmen for 2 months to protect their forests and another panchayat took steps to put down minor forest offences ; three panchayats did some planting work, and the plantation already formed is reported to be thriving. One panchayat was said to be on the verge of dissolution but has been resuscitated by a change in the managing body.

Cadre of Gazetted Forest Service.

During the year the importance and urgency of increasing the cadre of the gazetted service were placed before Government with facts and figures justifying the proposals. The necessity of formulating a definite policy in the matter of future recruitment and the training of candidates for the gazetted ranks was also brought to the notice of Government but the year came to a close without any decision one way or the other.

Sind separation.

As the constitution of Sind as a separate province came into force just after the close of the year this is the last Forest Administration report chronicling the work of the Sind Forest Circle, and with it has ended the long association of that Circle with the Bombay Presidency which had, since the creation of the post of Chief Conservator in 1917, become closer. The Circle however continues to be administered by officers borne on the cadre of the Bombay Forest Service and this arrangement is likely to continue at least for some time. The question whether Sind should have a separate cadre of Forest Officers is beset with many difficulties and is engaging the close attention of both Governments.

Dangs Forest Administration.

Though the Surat Dangs were transferred to the Control of the Government of India with effect from 1st July 1933, they continued to be administered by staff belonging to the Bombay Government. The conditions governing the loan of the services of the staff to the Government of India, the future relations between the Bombay Forest Department and the Dangs administration, and questions relating to certain financial adjustments still remain to be decided. An appendix is attached at the end of this report containing a short summary of the year's work done in the Dangs, giving details of area, exploitation, offences, roads and buildings, regeneration, revenue and expenditure etc.

CHAPTER VIII.

GENERAL REMARKS.

The outstanding events during the year were the innumerable celebrations in connection with the Silver Jubilee of His Majesty the late King George V later followed by universal mourning at his death.

In connection with the Silver Jubilee celebrations the Forest Department supplied very considerable quantities of firewood free of cost for the bonfires which terminated the celebrations.

The financial results of the year were not only better than those of last year but also a distinct improvement on those of the preceding quinquennium, and this fact is a clear indication of the steady improvement in the prosperity of the people of the Bombay Presidency. There was an upward trend in the timber market in the Northern Circle as reflected in the prices realized for timber coupes almost everywhere in that Circle. In the Southern Circle there was a substantial rise in the prices for timber sold from Depots but this was perhaps more the result of competition among speculative bidders than any real indication of the improved state of the market. The condition of the fuel market was still unsatisfactory in this Circle, especially in the Belgaum Division where many fuel coupes were withheld from sale owing to contractors holding large stocks of fuel on hand. The sandalwood market is gradually depreciating owing most probably to large imports of sandalwood from outside India flooding the market. The question of opening a depot at Bombay for the retail sale of sandalwood is being considered.

Three hundred and twenty-six tons of teak sawn wood and 201 tons of teak logs were supplied to the M.& S.M. Railway. 53,000 first class MG sleepers were also supplied in addition to the annual supply under the three years' contract. The G. I. P. Railway being in the market for Kanara teak, about 82 tons of timber in the log was supplied to this Railway during the year.

Thana Gurcharans.—The Gurcharan Officer inspected several gurcharans in the Murbad, Bhiwandi, Kalyan, Palghar and Dahanu talukas and Umbergaon Petha. It is reported that the educative work carried out by the Revenue and Forest staff has resulted in a marked improvement in the method of lopping branches for tahal in all gurcharans. It has also been noted that the objectionable and illegal practice of cutting large branches for use as firewood has been discontinued, owing to the fact that the thinnings now carried out in the Thana District provide an ample supply of firewood for domestic consumption. The amount of tahal now being taken from gurcharans has also diminished to a certain extent as the villagers have started using rice husk instead which they obtain from the recently established rice mills in the District at a cost ranging from 4 to 6 annas per cartload. The use of rice husk saves the villagers much labour which the cutting and carrying of tahal entailed.

Forest Advisory Committees.—A meeting was held at Godhra on 12th December 1935 and matters relating to the closure of coupes, sale of grass from closed areas to local villagers and grant of land to be disforested at Zankaria were discussed. At Nasik a meeting was held on 12th August 1935 but no business was transacted as the only non-official member who had proposed certain subjects for discussion failed to attend the meeting. Another meeting was proposed to be held at Thana on 3rd August 1935 but it was cancelled as no subjects were proposed for discussion.

Two meetings—one in the Kolaba District and the other in the West Khandesh District—were held, but no work of any importance was done. In the East Khandesh District no meeting was held as there were no subjects for discussion.

The committees in Kanara and Dharwar held their meetings in June 1935. The Kanara Committee had 20 subjects down for discussion but several of these were concerned with matters that could be dealt with under the existing rules. In one case it was proposed to amend rule A I (*a*) of the Kanara Forest Privilege Rules so as to allow villagers to use conveyances for transport of fallen deadwood for domestic purposes etc. instead of being restricted to head loads only. After due consideration Government did not find it necessary to amend the rule as proposed. The Dharwar committee's proposal that gun clubs should be permitted to hunt pig within forest areas from 15th June to 30th November was accepted by Government, while another proposal for the extension of the last date for payment of grazing fees from 15th August to 15th January was sanctioned by Government subject to certain reservations.

The Forest Grievances Enquiry Committee appointed in February 1935 held five meetings in all and discussed the long lists of grievances prepared by the members on the Committee. After close of the year, i.e. on 13th May 1936, the Chairman submitted the final report to Government and Government's orders on this report are awaited.

Gun Clubs.—Five new gun clubs are reported to have been organized during the year, one in Haliyal Taluka, one in Mundgod Petha and 3 in the Belgaum District. The clubs in the Dharwar District are doing good work and have killed 272 pig during the year. The club formed in Haliyal Taluka carried out 3 shikar expeditions and killed 6 pig. 18 pig were killed and 2 were reported to be wounded by the clubs in the Belgaum District.

Two new gun clubs, one in the Satara District and the other in the East Khandesh District, have been created for the purpose of exterminating pig. The officer in charge " Pig-killing campaign " killed 44 pig in the Poona District and Mr. Piloba Dhondiba Dhumal of Karajikop in the Satara District killed 45 pig, as against 20 in the previous year. The permission granted to this person has been further extended up to 30th June 1937.

Hunting and Shooting.—The revenue realized from shooting license fees was Rs. 7,517 as against Rs. 8,415 in the previous year. In addition to this a sum of Rs. 70 was recovered in fines for breach of the game rules. No special shikar establishment was maintained, but all possible steps to prevent poaching were taken.

Details of animals killed in Government forests are given below :—

All India serial No.	Animals.	Northern Circle.	Central Circle.	Southern Circle.	Total.	Average of previous 5 years.
1a	Tiger	..	12	34	46	Figures not available.
2	Panther	70	16	35	68	
8	Wild dogs	..	..	1	1	
14	Bear	..	4	10	14	
15	Wild elephants ..	..	..	21	21	
17	Bison	..	..	15	15	
29	Blue bull	..	13	..	13	
30	Bhekar (4 horned antelope).	3	3	..	6	
33	Barking deer ..	..	..	1	1	
37	Sambhar	..	5	11	16	
38	Cheetal	1	..	4	5	
46	Wild pig	6	92	301	399	
	Total ..	27	145	433	605	

It is reported that a tiger living in the forests of Sandavli, Kelavdi and Jalkewadi in the Satara Range attacked 2 men of whom one died. Permission was granted to the neighbouring villagers to destroy this animal but as there were no further attacks on human beings, the permission was withdrawn after about 2 months. In the Bankapur taluka a man was injured by a tiger.

Rewards were paid by the Revenue Department for destroying noxious animals in the Southern Circle as under :—

	Rs.
Wild elephants	650
Wild pig	295
Wild dogs	10
Total ..	955

The experimental scheme of semi game sanctuaries, about which mention was made in the previous report, was continued in the Hyderabad and Karachi Divisions of the Sind Circle. The Conservator reports that it is not yet possible to say whether this scheme has led to any increase in game in the protected area.

Forest Cultivation and Forest Settlements.

A sum of Rs. 18,835 was recovered in the Northern Circle, being assessment on forest lands given out for temporary cultivation. The total collection of assessment for forest lands under cultivation in the Central Circle amounted to Rs. 35,162. One new settlement was opened for Mahars at Janori in the East Khandesh Division. In the North Khandesh Division two new settlements—one at Hiverkheda and the other at Chirkhan—were opened. Three new settlements in the Sakri Range of the West Khandesh Division have been sanctioned and steps are being taken to open them. The area of all settlements in the East Khandesh Division was resurveyed and vacant plots were distributed by the Divisional Forest Officer. The work of remeasuring areas in the settlements in the North Khandesh Division is in progress. Revision survey work has been undertaken in two settlements of this Division in order to judge whether the time is ripe for a general transfer of completed settlements to the Revenue Department.

Alnavar-Dandeli Railway.—The results of the working of this Railway for the two years 1935-36 and 1934-35 are given below :—

Year.	Receipts.	Expenditure.	Surplus.
	Rs.	Rs.	Rs.
1935-36	38,569	45,629	— 7,060
1934-35	41,624	45,526	— 3,902
Difference	— 3,055	+ 103	....

There was a considerable fall in the earnings of the railway from goods traffic, which was partly due to the quantity of timber disposed of in sales during the year being below normal and partly to the fact that of late,

G. P. Z. P. 1937.

H. E. The Governor of Bombay's shoot. May 1936.
Close up of some of the Trophies.

the purchasers from Belgaum, Dharwar and Hubli sides choose to have their material transported by carts and motor buses instead of by railway.

Grass Storage under the 9-year monopoly contract.

The purchaser of the grass at Godhra completed his contract by 31st December 1935.

The purchaser of the grass at Dohad removed 9,00,000 lbs. of grass; 2,24,255 lbs. of damaged grass were also sold for Rs. 10. The purchaser has been granted a further extension till 30th November 1936 for removing the remaining stock which amounted to 65,60,870 lbs. at the close of the year.

Match manufacture.—As the concession granted to the Gujarath Islam Match Manufacturing Company of removing matchwood species at the reduced rate of 6 annas per cartload terminated on 31st May 1935, the matchwood coupes in the Panch Mahals Division were sold for Rs. 1,630 in accordance with the provisions of the overlapping Matchwood Working Circle drawn up for that Division. No matchwood coupes were sold in the Thana Divisions due to lack of demand.

Thana Malki Teak.—It is reported that the 30 per cent. share paid to the District Local Board, Thana, out of the sale proceeds of the Thana Malki Teak amounts to Rs. 24,875. In accordance with the orders issued in Government Resolution, Revenue Department, No. 2574/24, dated 16th January 1929 the above sum has to be used for works to be agreed upon by a standing committee consisting of the Collector, the Divisional Forest Officer concerned and the President of the District Local Board. So far, this money has not been utilized, and therefore, the orders of Government were brought to the notice of the Collector who has promised to convene a meeting of the standing committee. A 5-year programme of work has been drawn up by the Divisional Forest Officers for discussion at the meeting.

Village Uplift Scheme.—The Divisional Forest Officer, Kolaba, attended three meetings held by the Collector and suggested improvements in communications and facilities for drinking water in remote tracts. The Divisional Forest Officer, Satara, met the "Village Improvement Committee" of Kasegaon and discussed the question of reserving some forest area for grazing of bulls and agricultural oxen. He also discussed village improvement matters with the villagers of old Mahableshwar. The Range Forest Officer, Karad, took part in the village improvement scheme and gave three useful lectures on forest matters at the meetings held at Satara.

Wood Distillation.—A scheme for starting a wood distillation factory in Gujnal Range of the Belgaum Division was initiated by a forest contractor in partnership with a chemist. Certain concessions were sanctioned by Government in their favour. But owing to disagreement between the partners, the scheme fell through and the concessions were withdrawn by Government. A well organized forest industry of this kind would be a great help both to the Forest Department in disposing

of fuel at present unsaleable and to the people by providing employment. It is hoped that the scheme may yet come to something.

Natural History specimens for scientific purposes.—The Reverend G. Palacios, S. J., Principal and Professor of Biology, St. Xavier's College, Bombay, has been granted a permit annually to enter any reserved forest in the Bombay Presidency for the purpose of studying the habits of animal life and recording the habitat, animal and plant associations, parasites etc. His permit entitles him to carry a gun for self protection and, when necessary, for shooting any specimen of bird, small game or such other game as may be of interest to him in his researches, or as museum exhibits. The Rev. Father visited different parts of the Presidency, and the results of his investigations will no doubt be published in due course.

In particular, he has communicated to this office certain observations on—

(1) *Leptocoma minima,* an interesting and rare sun-bird found in the North Kanara forests.

(2) *Alcyon pileata* the Black-capped king Fisher found in the same locality and considered as rare. Though this species is peculiarly called a coastal bird, a specimen was collected 12 miles inland near Bargada but the fact to be remembered is that the place where it was collected is but a few miles from the Kalinadi which is a tidal river up to about 20 miles upstream. This species has a mixed diet of fish and insects, mainly grasshoppers and *Hemiptera.*

(3) *Serpent eagles,* collected in different parts of the Kanara forests, showed a remarkable difference in size and colour as compared with 8 specimens collected in other portions of the Western Ghats. There is reason to believe that the species may be *Spilornis cheela Albidus* (*sic.*). Some of the authors consider this species as very uncommon in the Western Ghats. It is however, found that it is not rare at present in the Uhla and Amba valleys in the northern portions of the Western Ghats.

Forest Section in the Lord Reay Industrial Museum, Poona.

The Trustees of the above museum have been trying, for the past few years, to establish a Forest Section in their museum. A free grant of timber of the value of Rs. 2,000 was sanctioned in Government Resolution, Revenue Department, No. 6591/28, dated 27th April 1931 for this museum from the timber depots in the Southern Circle. The material supplied consisted partly of teak and blackwood timber costing Rs. 1,522 and partly prepared specimens of timber, such as sandalwood, bamboos, canes, seeds, etc. costing Rs. 478. Over and above the exhibits collected and supplied by this Department, the Trustees have received a number of instructive and important exhibits from (1) the Forest Research Institute, (2) the Lac Research Institute, (3) the Mysore State and (4) some other sources. Thus, a good beginning has been made with the Forest Section and the authorities of the museum hope that this section will, in course of time, develop into a full-fledged forest museum.

Remarks of Divisional Commissioners on Circle Reports are given below :—

Commissioner, Northern Division (Mr. G. F. S. Collins, C.I.E., I.C.S.) :

The large and increased value of forest produce removed by privilege holders, the number of cattle which grazed in forests and the continued policy of closing forests for only half the normal period show that a liberal policy continues to be shown towards agriculture.

2. On the other hand, the number of forest offences has again risen. The main reason, however, for this appears to be the more careful registration of offences rather than greater lawlessness on the part of the agricultural population.

3. The Commissioner agrees with the Conservator that it is desirable that the Standing Committee should draw up as soon as possible a programme for spending the share from the exploitation of *malki* teak which has accrued to the Thana District Local Board.

4. The financial result of the year's working is a matter for satisfaction. The Commissioner, in drawing attention to the again increased surplus of revenue over expenditure, would strongly endorse the suggestion of the Conservator that a more reasonable proportion of the gross revenue should be earmarked for works of development and improvement of the forests. In this connection he considers that the proposed Ozar-Saiwan and Temba-Parali Roads referred to in paragraph 2 (*a*) of the Conservator's report are of prime importance both as works of public utility and for the exploitation of valuable forests.

Mandvi Range (*Surat District*).

There is little that calls for remarks as far as this Division is concerned, the area included in it being confined to the Mandvi Range of the Surat District.

Commissioner, Central Division (Mr. J. W. Smyth, C.I.E., I.C.S.) :

* * * * * *

Rights, Privileges and Free Grants.

2. During the year free grants of timber were made to poor people in deserving cases for the construction of and repairs to houses and huts in both Circles. In the Central Circle such grants were also made for the construction of and repairs to temples, schools, chavdis, etc., as being works of public utility.

Forest Offences.

3. There was an increase of 915 and 472 in the total number of offences during the year as compared with the year 1934–35, in the Northern Circle and Central Circle respectively. In the Northern Circle there was an increase in all classes of offences, whereas in the Central

Circle the increase is distributed under all heads except " unauthorized grazing ".

The increase in the number of offences under the head " unauthorized felling " and " unauthorized grazing " in the Northern Circle is reported to be due to (1) the fact that the subordinates are now made to report every offence noticed by them irrespective of the fact that the offender is traced or not and (2) to the vigilance of the subordinates. The increase in the Central Circle is attributed to the fact that a register is now maintained by each subordinate for registering the offences detected by him and to the greater vigilance shown in the detection of offences.

Prosecution.

Of the 131 cases in the Central Circle 101 were decided during the year. Convictions were obtained in 95 cases as against 80 in the previous year.

Apart from this, 6,504 cases were compounded in the Central Circle and brought in compensation amounting to Rs. 39,986.

Protection from Fire.

The total area burnt in the Central Division during the fire season ending 31st May 1936 was 356 square miles as compared with 359 square miles in the previous year. The decrease in the Central Circle is due to satisfactory fire protection in the East Khandesh, North Khandesh and Kolaba Divisions. The increase of about 16,000 acres in the West Khandesh and Satara Divisions was counterbalanced by the corresponding decrease in the other Divisions. There was an abnormal increase in the West Khandesh Division due to ineffective fire lines and deliberate incendiarism on the part of villagers in pursuit of game or on account of feuds between neighbouring villages. It is stated that the Pimpalner and Chinchpada Ranges were responsible for extensive fires.

Grazing Fees.

The revenue realised from grazing in the Central Circle amounted to Rs. 2,93,203 as against Rs. 2,83,651 in the previous year. The increase is partly due to the greater number of cattle belonging to professional graziers which came to North Khandesh for grazing and to the greater exertions made by the Forest Subordinates in the collection of grazing fees and in checking cattle found grazing without permits. In the Northern Circle also there was an increase in the collection of grazing fees as compared with the figures for the previous year.

General Remarks.

The special features of the administration reports under review appear to be the increase in the total number of forest offences both in the Central Circle and in the Northern Circle. During the year there was an

increase of 915 in the Northern Circle and 472 in the Central Circle in the total number of offences. It is stated that in the Central Circle there was also an increase in the total as compared with the average of the past three years. If as stated by the Conservators of Forests the increase is really to be attributed to the fact that fewer cases have gone unnoticed and unrecorded owing to stricter supervision and greater vigilance on the part of the Forest Subordinates, the department deserves commendation. It may however be pointed out that both last year and the year before last the increase was reported to be due to the same causes. It is not certain that these causes hold good from year to year and the matter would seem to be deserving of further enquiry. It is possible that now that the Village Improvement Movement is making headway a remedy may be found through close cooperation on the part of the department with the villagers themselves and the various propaganda sub-committees. In this connection the Collector of Satara remarks :—

> " The subject of forest rules, the rights and duties of the public and the need of forests and their proper maintenance are assiduously taught by the propaganda sub-committee of the Village Improvement Committee with considerable success."

It is satisfactory to note that there has been an increase in the gross forest revenue both in the Northern Circle and the Central Circle. In the Northern Circle the increase was Rs. 3,45,156, whereas in the Central Circle it was Rs. 56,464. The increase in the Central Circle is reported to be chiefly due to the addition of Mandvi Division to the Circle, and to better prices being obtained for coupes in the North and West Khandesh and Kolaba Divisions, and for grass kurans in the East Khandesh, West Khandesh and Poona Divisions and to the increase in the collections of grazing fees.

Commissioner, Southern Division (Mr. J. A. Madan, C.I.E., I.C.S.) :

Southern Circle.

The gross revenue and expenditure were Rs. 20,82,898 and Rs. 11,36,730 respectively as against Rs. 21,05,086 and Rs. 12,04,294 respectively during the previous year. The fall in gross revenue was more than counterbalanced by the fall in expenditure, so that the surplus amounted to Rs. 9,46,168 as against Rs. 9,00,792 during the previous year. The decrease in gross revenue was due to the less quantities of the forest produce disposed of during the year under report.

2. The number of forest offences fell from 3,027 to 3,005. Offences under all the heads except those under " Forest Fires " recorded a decrease. There is no change in the tendencies of the people of Gujnal Range to cut illicitly fuel for sale. The Conservator of Forests does not consider it necessary at present to resort to communal punishment and

the liberal grant of rewards for the detection of offences, as suggested by the Collector of Belgaum. He suggests that the people may be given one more warning before resorting to communal punishment. The Commissioner agrees with the Conservator. Much could be achieved if the Collector also issues special warning to village officers to co-operate with the Forest Officers and render them all possible assistance in the detection of offences.

3. There was a decrease in the number of animals admitted for grazing in Government forests, as well as in revenue from grazing fees. This is attributed to the failure of fodder grass in forests and the consequent exemptions from the payment of grazing fees claimed.

4. The Revenue Administration of the four forest Mahals in the Circle by the Forest Department was satisfactory.

5. The Forest Advisory Committee, Dharwar, discussed 3 subjects, and that in Kanara discussed 20 subjects. The proposal of the Forest Advisory Committee, Dharwar, to allow gun clubs to hunt wild pig in forest areas from 15th June to 30th November was approved by Government. The proposal of the Committee to extend the last date of payment of grazing fees from 15th August to 15th January was also accepted by Government with certain reservations.

6. The Alnawar-Dandeli Railway worked at a net loss of Rs. 7,060 as against Rs. 3,902 in the previous year. As observed by Mr. Clayton in his review last year it should be considered whether the loss could not be avoided or reduced by an increase in rates.

7. Five new gun clubs are reported to have been formed during the year under report. The steady increase in their number shows that gun clubs are becoming popular as a means of protecting crops from wild pig.

8. The relations between the Forest Department and the Revenue Department continued to be cordial.

Kolaba Division.

The gross revenue rose from Rs. 1,72,552 during 1934-35 to Rs. 1,74,818 during the year under report, while expenditure fell from Rs. 1,26,626 to Rs. 1,26,572. The surplus thus amounted to Rs. 48,246 as against Rs. 45,926 last year. The increase in revenue was due to better prices realised by the sales of coupes which were held at a time when the prices of charcoal in the Bombay market had risen considerably.

2. The number of forest offences rose from 1,470 to 1,629. Unauthorised cuttings and grazing and other offences contributed to the increase. The number of forest fires however fell from 105 to 96. The Collector has taken action to check the tendency to illicit cuttings of forest trees noticeable in the District and particularly in the Mahad Range by the issue of special warning to the village officers to assist the forest authorities in the protection of the forests and the detection of offenders. The Conservator of Forests is averse to the adoption of

communal punishment suggested by the Divisional Forest Officer, Kolaba, to overcome the mischief. The Commissioner agrees with the Conservator and hopes that the action taken by the Collector will have the desired effect.

3. As the damage caused by erosion to the Casuarina plantations at Akshi and Nagaon on the sea coast was less than in the previous year, the planting up of two coupes was revived.

4. The net forest revenue paid to the Matheran Municipality was Rs. 1,665-0-6 as against Rs. 1,777-9-0 during 1934-35.

5. The result of the appeal preferred by Sardar Bivalkar to the Privy Council is not yet officially known although it appeared in newspapers that the Privy Council decided the appeal in favour of the Sardar.

6. The Forest Advisory Committee, Kolaba, which held one meeting during the year discussed no subject of importance.

7. The relations between the Revenue Department and the Forest Department continues cordial.

Revenue Commissioner for Sind (Mr. R. E. Gibson, C.I.E., I.C.S.) :

There has been appreciable increase in the forest offences under items II and III of clause 3 (*a*) under Chapter II which indicates that forest subordinate officers have been vigilant in their duty.

The chief event of the year has been the decrease in the revenue and surplus revenue due to closure of Shikarpur, Sukkur and Larkana coupes for failure of Quetta market.

The remarks on the Protective Establishment in the clause " Casualties and Punishments " under Chapter VII are of interest.

Messrs. Brooks and Sothers carried out the duties of Conservator with considerable energy and judgment.

APPENDIX.

The following is a short summary of the administration of the Dangs, Surat, for the year 1935-36 :—

The total area of the Dangs is 356 square miles of reserved forest and 304 square miles of protected forest in charge of the Forest Department. There was no change in the area during the year.

Of the total number of coupes due for working during the year 29 coupes were put up for sale and all were disposed of during the year. The coupes in three felling series were worked departmentally for the saw mill at Sundha.

A sum of Rs. 39,531-9-6 was spent on the construction of new road works under the head Capital Outlay on Forests. The most important work was the construction of a 12 span bridge at Kurkas on the Waghai-Nawapur road, the contract for the construction of which was given to Messrs. T. C. Verma & Co. of Bombay. Waghai-Chikhalda section of the Waghai-Nasik road and Waghai-Bhawandgad section of the Waghai-Nawapur road were completed during the year. The progress of road work in the Dangs is now nearing completion. With the completion of the bridge at Kurkas we shall have an all weather metalled and murummed road between Waghai and Ahwa, the Head Quarters of the Dangs. Some of the river crossings on this road where natural crossings have been provided for the present require to be bridged. Plans and estimates for the proposed works have been prepared and the works will be taken in hand later as funds permit. A causeway at Bhawandgad across the Mulchand Nalla was constructed at a cost of Rs. 4,448-10-3.

The Police lines at Ahwa, Veterinary Dispensary and Quarters for Assistant Surgeon at Ahwa and the Dispensary building at Waghai were completed during the year.

Rs. 6,150-10-9 were spent on maintenance and repairs to 12 miles of metalled and 298 miles of fair weather roads.

The number of offences detected during the year were only 17 as against 41 of the last year and 42 average of the past 3 years.

Except for the occurrence of small fires due to carelessness and accidents fire protection in the Dangs continued to be a success.

The work of regeneration was carried out in clear felling areas in the Dangs. The area so planted up during the year was 973 acres. 45,847 stump plants were surviving at the end of the monsoon in unrabbed area.

The total area worked during the year was 4,854 acres under improvement *cum* clear fellings and 3,367 acres under selection *cum* improvement fellings. The total outturn of major produce was 1,080,960 c.ft. of timber and 495,550 c.ft. of fuel as against 955,516 c.ft. of timber and 615,125 c.ft. of fuel of the previous year.

The total revenue from minor forest produce was Rs. 1,59,288 as against Rs. 99,140 of the previous year. The increase in minor produce

is due to the value of grass removed by right and privilege holders being added during the year.

The total receipts during the year were Rs. 6,51,786 as against Rs. 6,11,864 of the previous year and the total expenditure under 8-Forests was Rs. 2,17,069 as against Rs. 2,28,533 of the previous year. A sum of Rs. 40,945 was spent under the head Capital Outlay on Forests.

The net profit of the departmental operations was Rs. 40,046 as against Rs. 33,619 of the previous year. The working of the Sundha Saw Mill shows a net profit of Rs. 19,398-13-10 as against Rs. 21,043-15-11 of the previous year.

The charge of the Division was held by Mr. E. O. Sampson, M.B.E., during the year under report.

The charge of the Dangs Sub-Division was held by Mr. D. G. Sane from 1st April 1935 to 3rd June 1935 and by Mr. E. K. Kotwal from 14th October 1935 to 31st March 1936. The charge of the Dangs Sub-Division was held in abeyance from 4th June 1935 to 13th October 1935. Rao Saheb C. K. Amin was posted as an additional Sub-Divisional Forest Officer to the Dangs from 17th December 1935 to 31st March 1936.

C. E. L. GILBERT,
Chief Conservator of Forests,
Bombay Presidency.

Poona, 13th October 1936.

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GOVERNMENT OF BOMBAY.

REVENUE DEPARTMENT.

Resolution No. P. 57/20160.

Bombay Castle, 15th January 1937.

Letter from the Chief Conservator of Forests (Mr. C. E. L. Gilbert), No. 2/2140, dated the 14th October 1936—Submitting the Forest Administration Report of the Bombay Presidency, including Sind, for the year 1935-36.

RESOLUTION.—The year under report was the last of the long association between Sind and the Presidency.

2. During the year the area under forests increased by about 29 square miles in Sind by alluvial accretion. There was an increase in forest offences mainly of unauthorised felling or removal of forest produce and unauthorised grazing; but of over 24,000 cases registered only 420 were actually taken to court, nearly 22,000 cases being compounded.

The increase in the number of offences was due among other causes to greater vigilance and the better registration of offences. The results of the measures adopted to protect the forests from fire were good. Of 8,000 square miles under protective supervision, 7,505 square miles were free of fires. The cost of protection was just over Rs. 3 a square mile. A number of villages were rewarded for good fire protection work by reduction or remission of grazing fees.

3. Nearly 88 per cent. of the Presidency forests were open to the grazing of horned cattle throughout the year. The policy of closing forests to grazing for only half the normal period was continued in the Northern Circle (except in cases where the forest growth was retarded by fires). The number of animals recorded as having grazed was higher than that of last year and the average of the last three years. The grazing fees collected during the year amounted to Rs. 5,72,344 as against Rs. 5,56,790 in the previous year. But for the concessionary rates of grazing fees the income from this source should have been Rs. 23,34,786. The number of animals admitted to graze free was 597,719 as against 573,282 in the previous year.

The value of the forest produce removed free by privilege holders and free grantees is estimated to have been nearly Rs. 29 lakhs.

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4. The results of the silvicultural operations of the department were satisfactory. Particular praise is due to those responsible for the high proportion of survivals of germinated and transplanted trees in the Pen and Panvel ranges of Kolaba and in the Southern Division, particularly Belgaum. These, however, are areas of heavy rainfall. In the drier regions the work is more difficult and of even more importance. In this connection the success and expansion of the agri-cum-forestry system, particularly in the East Nasik Division, is noteworthy. Government agree with the Chief Conservator as to the value of this system in bettering the economic condition of the forest tribes.

5. While the revenue earned by the department rose from Rs. 55,33,750 in the previous year to Rs. 58,89,966 during the year under review, the expenditure fell from Rs. 31,15,438 to Rs. 31,09,344. The average of revenue and expenditure during the previous quinquennium was Rs. 55,66,458 and Rs. 36,67,374, respectively.

The three Government saw mills in Kanara yielded a very high profit during the year.

6. A number of interesting schemes of research and experiment continued under the control of the Chief Conservator. Five new gun clubs were formed. Forest land given out for cultivation in the Northern and Central Circles brought in an income of Rs. 53,997.

7. Government are pleased to note the continued efficiency of the Forest Department.

By order of the Government of Bombay
(Transferred Departments),

N. A. FARUQUI,
Under Secretary to Government.

To

The Commissioners of Divisions,
All Collectors,
The Chief Conservator of Forests,
All Conservators of Forests,
The Director of Land Records,
The Director of Agriculture,
The Director of Industries,
The Compiler, General Administration Report,
The Commissioner of Labour and Director of Information,
The Oriental Translator to Government,
The Accountant General,
The General Department,
The Finance Department,
The Public Works Department,
The Secretary to the High Commissioner for India, London (by letter),
The Secretary to the Government of Sind (by letter).

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